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Mines and Minerals: Rapid Industry Assessment

July 2013

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Abstract

Pakistan has a huge endowment of mineral deposits including precious metals, dimension stones, industrial mineral, rock salt and coal. Currently, the National Mineral Policy (NMP2) provides a regulatory framework. Minerals other than oil, gas and nuclear minerals are a Provincial subject under the Constitution.

Baluchistan is the richest province in Pakistan in terms of minerals. The existing regulatory framework for this province exists under the Baluchistan Mineral Rules of 2002. There are two types of mining concessions categories; Small Scale Mining (S.S.M) and Large Scale Mining (L.S.M).

KPK has vast resources of dimensional stones. The existing regulatory framework is based on the North-West Frontier Province Mining Concession Rules, 2005. The Mines and Minerals Department (MMD) is responsible for the management of mineral resources in the province.

The USAID Firms Project is extending support to the KPK and Baluchistan provincial governments in developing a policy framework. The objective of this Report is to offer a rapid industry assessment of the Mining sector in the Baluchistan and KPK provinces to help policy experts to propose new policy frameworks for the mineral sector.

Acronyms

ADP	Annual Development Plan
AJK	Azad Jammu Kashmir
BDA	Baluchistan Development Authority
BMR	Baluchistan Mineral Rules
CFTC's	Common Facility and Training Centers
D.F.I	Development Financial Institution
DGMM	Directorate General of Mines and Minerals
EL	Exploration License
FATA	Federal Administrated Tribal Areas
G.I.	Gross Index
GDP	Gross Domestic Product
GoB	Government of Baluchistan
GoP	Government of Pakistan
GSP	Geological Survey of Pakistan
GVA	Gross Value Addition
GVP	Gross Value of Production
ICT	Islamabad Capital Territory
J.V.	Joint Venture
KPK	Khyber Pakhtunkhwa
L.S.M	Large Scale Mining
MCC	Mennonite Central Committee
MDRL	Mineral Deposit Retention License
ML	Mining Lease
MMD	Mines and Minerals Department
MMDD	Mines and Mineral Development Department
MRDL	Mineral Deposit Retention License
MTAP	Mining and Technical Assistance Project
NMP	National Mineral Policy
PASDEC	Pakistan Stone Development Company
PKR	Pakistani Rupee

PL	Prospecting License
PMDC	Pakistan Mineral Development Corporation
PUNJMIN	Punjab Mineral Development Corporation
RL	Reconnaissance License
S.S.M	Small Scale Mining
U.A.E	United Arab Emirates
U.K	United Kingdom
U.S.A	United States of America

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Executive Summary

Pakistan has a huge endowment of mineral deposits including precious metals, dimension stones, industrial mineral, rock salt and coal. Baluchistan is by far the richest province in terms of mineral resources in Pakistan and Khyber Pakhtunkhwa (KPK) is the richest province in terms of gem stones. However, there is huge gap between the potential and actual production.

The mining industry in Pakistan is characterized with unique industry characters such as being highly risk prone, capital intensive and subject to global competition with high volatility of prices. There has been very limited exploration by using modern managements, adequate capital and appropriate technical know-how.

The First National Mineral Policy (NMP 1995) at both the Federal and Provincial levels paved the way for an expansion of mining sector activity in Pakistan. A new National Mineral Policy (NMP2) was formulated in 2012 to align a regulatory framework with contemporary practices and enhance the international competitiveness of Pakistan's mining sector. It is noteworthy that minerals other than oil, gas and nuclear minerals are a Provincial subject under the Constitution.

Baluchistan is the richest province in Pakistan in terms of minerals with large reserves of copper, gold, iron ore, chromite, marble and coal, amongst others. Unfortunately, most of these deposits remain largely un-exploited owing to various reasons, including the law & order status in the province. The Government of Baluchistan created its department of Mines and Mineral Development in 2002 to manage its mines and mineral sector. Three wings are working in the mines and mineral development department; Directorate General of Mines and Mineral, Inspectorate of Mines, and Mines Labour Welfare Organization.

The existing regulatory framework exists under the Baluchistan Minerals Concession Rules 2000. There are two types of mining concessions categories; Small Scale Mining (S.S.M) and Large Scale Mining (L.S.M). There are four types of Mineral Titles granted under the large scale mining; 1- Reconnaissance License (RL), 2- Exploration License (EL), 3- Mineral Deposit Retention License (MDRL), 4- Mining Lease (ML).

The mining sector is not highly developed in Baluchistan. There are only a few projects where latest technology has been implemented. However, in a few major Joint Venture projects, use of technology has helped tremendously improve the mining operations. At present, the following projects are using latest technology; Saindak Copper & Gold Project, Duddar Lead & Zinc Project and Dalbadeen Iron Ore Project.

KPK has vast resources of dimensional stones e.g. marble and granite, precious stones and metals, some industrial mineral, energy minerals and salt. However, the development of the mineral sector is constrained by the use of inefficient technology. As a result, KPK is currently not able to reap the full benefits and value of its resources. The existing regulatory framework is based on the North-West Frontier Province Mining Concession Rules, 2005. The Mines and Minerals Department (MMD) is responsible for the management of mineral resources in the province, in terms of regulating the grant of licenses and mining leases, exploration and development of mineral resources, including assessment and evaluation of mineral areas and the welfare of mine workers and enforcement of laws related to safety of mines and workers.

The Mineral Development Department of KPK has reportedly issued 1329 prospective licenses and leases to the private parties. The mineral titles issued for the purposes of large-scale mining include; Reconnaissance license, Exploration license, Mineral deposit retention license and Mining lease.

The USAID Firms Project is extending support to the KPK and Baluchistan provincial governments in developing a policy framework. The objective of this Report is to offer a rapid industry assessment of the Mining sector in the Baluchistan and KPK provinces. The report includes information about mineral reserves, extractions, policy and institutional framework, mining concessions, licenses in both provinces and snap shots on the status of major minerals. The Report also briefly captures the details of mineral resources in Baluchistan and KPK, respective production levels and key minerals with most economic potential.

1. INTRODUCTION

Pakistan has a huge endowment of mineral deposits including precious metals, dimension stones, industrial mineral, rock salt and coal. Baluchistan is by far the richest province in terms of mineral resources in Pakistan. Punjab has the second largest reserves of rock salt in the world, and Khyber Pakhtunkhwa (KPK) is the richest province in terms of gem stones. Recently, vast deposits of coal have been discovered in Sindh. However, there is huge gap between the potential and actual production.

Pakistan Mining industry is characterized with unique industry characters like highly risk prone, capital intensive and subject to global competition with high volatility of prices. Current practices of using crude and wasteful methods cause substantial damage to the deposits. There has been very limited exploration by using modern managements, adequate capital and appropriate technical know-how¹.

Mineral sector is a vital economic sector in national GDP. Its share has been ranging from 3.4% in 2006-7 to 3.1% in 2012-3. The Mineral Sector grew by 7.6% during 2012-13 but experienced a negative growth during 2008-9 and 2010-11 and low growth in earlier years. The trend of gross capital formation in the Mineral Sector shows that private sector had relatively better and steady performance as compared to Public and Government sectors except 2012-13.²

Large scale mining activities require massive initial investments, which are beyond the capacity of Pakistan's private and public sectors. In order to attract foreign investments, the federal and provincial governments have to create an environment in which foreign investors are reassured of the security of their investments and an orderly conduct of their business without fear of arbitrary interventions by authorities. The federal and provincial governments, conscious of these facts, have been introducing the necessary measures through its Mineral policies; 1995 & 2012³.

The implementation of the First National Mineral Policy (NMP 1995) at both Federal and Provincial levels paved the way for an expansion of mining sector activity in Pakistan. A new National Mineral Policy (NMP2) was formulated in 2012 to ensure its alignment with contemporary practices and enhance the international competitiveness of Pakistan's mining sector.

1.1 REGULATORY AND INSTITUTIONAL FRAMEWORK:

Minerals other than oil, gas and nuclear minerals and those occurring in special areas (FATA, Gilgit-Biltistan, AJK and ICT) are a Provincial subject under the Constitution. Provincial Governments/federating units are responsible for regulation, detailed exploration, mineral development and safety concerns in these operations, whereas geological/geophysical survey and mapping, mineral identification, regional exploration, national and international coordination and formulation of national policies and plans are federal responsibilities.

¹ Pakistan Economic Survey 2012-13

² Ibid

³ Bringing Mining in Pakistan to International Standards- Pakistan Mineral Working Group, NMP I&II

1.2 BALUCHISTAN MINERAL SECTOR

Baluchistan is the richest province in Pakistan in terms of minerals with large reserves of copper, gold, iron ore, chromite, marble and coal, amongst others. Unfortunately, most of these deposits remain largely un-exploited owing to various reasons, including law & order situation. The mining sector holds tremendous promise for creating much needed resources for the development of the province as well as creation of jobs for the local population, in not only the mining sector, but also in the spin- off and downstream processing industry such as cement, marble value addition, steel, etc.

1.3 KPK MINERAL SECTOR

KPK has important resources of dimensional stones e.g. marble and granite, precious stones and metals, some industrial mineral, energy minerals and salt. There are 100 million tones reserves and one billion tones reserves of two types of marble. However, the development of mineral sector is constrained by the use of inefficient technology i.e. blasting as common extraction technique which results in destruction to the material and lack of skills to finish and polish the stones. Resultantly, KPK is currently not able to reap the full benefit and value of its resources.

1.4 RAPID INDUSTRY ASSESSMENT- BALUCHISTAN &KPK

As a consequence of the above, the industry's best practices have not been introduced and meaningful investment in technology and expertise has not been made in the mineral sector of both provinces. In order to capitalize on the natural mineral endowments of KPK and Baluchistan Provinces, a complete review of the provincial policy/ regulatory regime needs to be undertaken to identify constraints to private investment and requisite service delivery in line with international best practices.

The USAID Firms Project is extending support to the KPK and Baluchistan provincial governments in developing a policy framework for their mineral sector. The objective of this assignment is to carry out a rapid industry assessment of the Mining Sector in Baluchistan and KPK provinces. The purpose is to have first hand idea of the overall dynamics of mining industry in order to assist the Policy and Regulatory Experts draft a comprehensive Policy and Regulatory documents.

1.5 SCOPE OF WORK

The Assignment required collecting and consolidating information from the respective provincial departments and other relevant sources at federal, provincial and industry levels. The information included details of operational/ non-operational mining concessions and licenses in the both provinces. It was also desired to compile an inventory list of mineral resources in Baluchistan and KPK as well reporting the respective production levels, key minerals with most economic potential.

1.6 METHODOLOGY

A combination of various tools was employed to compile the information according to the scope of work. A Data Collection Team of two experts was deputed; one each at Quetta- Baluchistan

and Peshawar-KPK, a Team Leader to coordinate, compile and analyze the information collected and Project Coordinator at FINCON Services-Islamabad were mobilized for the project.

Secondary data made available/collected through respective Departments of mines and mineral development, Government policies, government publications, annual federal and provincial development plans and industry reports was reviewed as literature review to extract the information which makes the bulk of Report in subsequent pages. Additionally, series of personal meetings were organized with relevant officials to obtain, update and verify information about various aspects of mineral industry. A comprehensive questionnaire was developed to obtain information at various levels in Government departments and private firms engaged in mineral extraction. The focus of information included mining concessions, business process for acquiring mining concessions, investment in mining operations, technology, extraction practices, skills and expertise.

1.7 THE STRUCTURE OF REPORT

Chapter II of the Report; Pakistan Mines and Mineral Sector profiles the mineral sector, mineral reserves, and mineral extractions, contribution of mineral sector in GDP, capital formation in the sector and policy framework regulating the mineral sector.

Chapter III; Mines and Mineral Sector Baluchistan captures the details of mineral reserves of the province, mineral extraction, institutional framework, policy framework of Mineral Concessions, contribution of mineral revenues, mineral concessions and leases in operations/granted for various minerals. Likewise, Chapter IV; Mines and Mineral Sector KPK have also similar content covering the major dynamics of mineral sector of KPK. The Annexure provide details of various mineral concessions granted to private sector in Baluchistan for major minerals.

2. PAKISTAN MINES AND MINERAL SECTOR

Pakistan has an endowment of huge mineral deposits including precious metals, dimension stones, industrial minerals, rock salt and coal. Baluchistan is by far the richest province in terms of mineral resources in Pakistan. Punjab has the second largest reserves of rock salt in the world, and Khyber Pakhtunkhwa (KPK) is the richest province in terms of gem stones. Recently, vast deposits of coal have been discovered in Sindh.

Most of mineral deposits are concentrated in Baluchistan and whatever minerals were produced its production has been affected by law and order situation, absence of necessary infrastructure and lack of technical capacity of mining. There is huge gap between the potential and actual production. There is need for the development of technologies for processing different indigenous ores to extract products of high commercial value that can play a dominant role in economic uplift, employment generation and exports⁴.

The mining industry is characterized with unique industry characters such as being highly prone to risk, capital intensive and subject to global competition with high volatility of prices. In addition, the use of crude and wasteful methods causes substantial damage to the deposits. There has been very limited exploration by using modern managements, adequate capital and appropriate technical know-how⁵. Following table reveals the mineral deposits/potential In Pakistan.⁶

Table 1: Reserves of Principal Minerals	
Minerals	Reserves
Argonite/Marble	very large deposits
China Clay	4.9 million tonnes
Chromite	Fairly large deposits
Coal	185 billion tonnes
Dolomite	very large deposits
Fire Clay	Over 100 million tonnes
Fuller Earth	Fairly large deposits
Gypsum	350 Million tonnes
Lime stone	very large deposits
Rock Salt	Over 100 million tonnes
Silica Sand	very large deposits
Sulphur	0.8 million tonnes
Soap Stone	0.6 million tonnes
Bauxite/Laterite	over 74 million tonnes
Iron Ore	over 430 million tonnes
Crude Oil	184 million US barrels

⁴ Pakistan Economic Survey 2012-13

⁵ Pakistan Economic Survey 2012-13

⁶ Ibid

Table 1: Reserves of Principal Minerals

Natural Gas	492 million cubec meters
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Mineral sector is a vital economic sector in national GDP. Its share has been ranging from 3.4% in 2006-7 to 3.1% in 2012-3. The share of mineral sector in national economy has been range bound revealing a slow growth in the sector.

Table 2: Sectoral Share in GDP

Year	% Share
2006-7	3.4
2007-8	3.3
2008-9	3.2
2009-10	3.2
2010-11	3
2011-12	3
2012-13	3.1

The percentage growth in the sector in the following table shows that growth has been oscillating during 2006-7 to 2012-13. The Sector grew by 7.6% during 2012-13 but experienced a negative growth during 2008-9 and 2010-11 and low growth in earlier years as well.

Table 3: Mines & Mineral Growth Rate

Year	% Growth
2006-7	7.3
2007-8	3.2
2008-9	-2.5
2009-10	2.8
2010-11	-4.4
2011-12	4.6
2012-13	7.6

The mineral sector has shown a steady trend in terms of its value in Rupee terms shown in the following table. The Mines and Mineral sector at constant prices had a value of Rs 297,183 million in 2006-7 which grew to Rs 721,565 million by 2012-13.

Table 4: GNP at Current Prices

Year	Rs. Millions
2006-7	297,183
2007-8	324,258
2008-9	413,256
2009-10	475,366
2010-11	494,739
2011-12	638,236
2012-13	721,565

The trend of gross capital formation in the Mineral Sector shows that private sector had relatively better and steady performance as compared to Public and Government sectors except 2012-13. In total, capital formation grew from Rs. 39,560 millions in 2006-7 to Rs.140,234 millions by 2012-13.

Table 5: Mines & Minerals in GDP			
Gross Capital Formation-Rs. Millions			
Year	Private sector	Public/Govt	Total
2006-7	19,081	20,479	39,560
2007-8	21,807	10,354	32,161
2008-9	32,195	14,660	46,855
2009-10	46,404	12,664	59,068
2010-11	30,606	12,151	42,757
2011-12	34,794	14,287	49,081
2012-13	48,298	91,936	140,234

The share of private sector grew from 48% in 2006-7 to 71% in 2011-12 whereas share of Public and Government sector shrank from 52% in 2006-7 to 29% in 2011-12. However, the massive capital formation by Public and Government sector caused the reversal of percentage share in 2012-13, private sector as 34% and Public/Government as 66%.

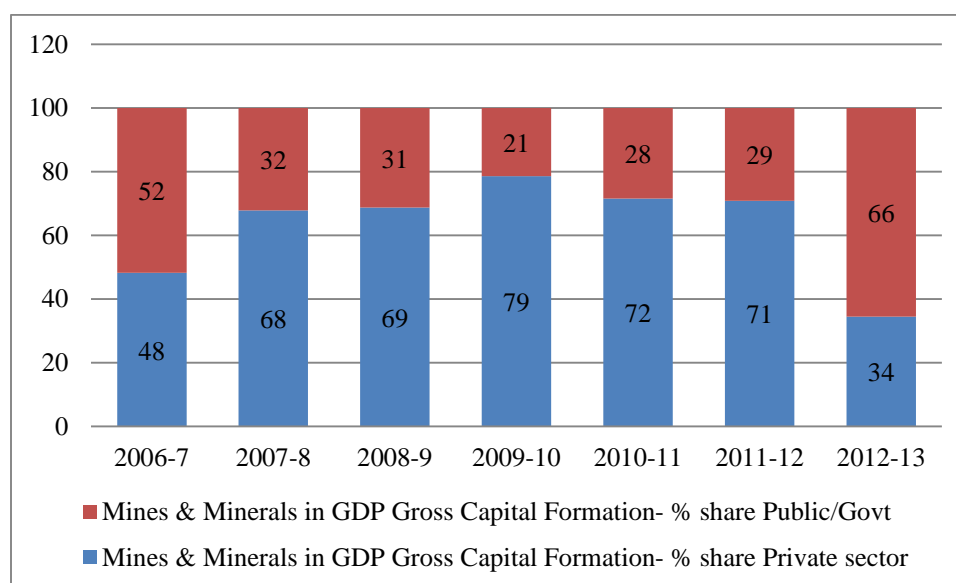


Figure 1 Share in Capital Formation- Private & Public/Govt. sector

2.1 EXTRACTION OF PRINCIPAL MINERALS

The following table reflects the extraction of various minerals during 2010-11 to 2012-13. Coal, natural gas, Chromite, Rock salt, Sulphur, copper, and phosphate showed negative change, whereas Dolomite, Barytes, and Calcite reflected very high growth in extraction.

Table 6 : Extraction of Principal Minerals

Minerals	Unit of Quantity	2010-11	2011-12	2012-13	% Change
Coal	M.T	3,291,617	3,178,986	3,079,156	-3.1
Natural Gas	MMCF	1,471,590	1,558,959	1,525,866	-2.1
Crude Oil	JSB(000)	24,041	24,573	28,462	15.8
Chromite	M.T	148,034	179,203	161,045	-10.1
Magnesite	M.T	4,908	5,444	5,949	9.3
Dolomite	M.T	240,111	198,392	449,034	126.3
Gypsum	M.T	885,368	1,260,021	1,297,020	2.9
Lime Stone	M.T	32,020,996	35,016,411	38,756,783	10.7
Rock Salt	M.T	1,953,711	2,135,760	2,104,986	-1.4
Sulphur	M.T	27,645	25,560	18,162	-28.9
Barytes	M.T	31,836	48,510	259,941	435.9
Bauxite	M.T	9,033	30,223	48,958	62.0
Calcite	M.T	607	170	370	117.7
Soap Stone	M.T	47,561	55,515	90,817	63.6
Marble	M.T	1,132,900	1,750,578	3,219,834	83.9
Copper	M.T	15,672	17,931	15,758	-12.1
Phosphate	M.T	30,950	69,400	58,204	-16.1

2.2 COMMERCIAL PROSPECTS OF MINERALS

The mineral deposits of Pakistan are vast and diversified. The qualities of non-metallic materials and building stones are high, and the purity of metallic ores are above average to high. The minerals are being exploited on a small scale and, as such, the full potential of Pakistan's mining sector is yet to be realized.

Large scale mining activities require massive initial investments, which are beyond the capacity of Pakistan's private and public sectors. In order to attract foreign investments, the federal and provincials governments have to create an environment in which foreign investors are reassured of the security of their investments and an orderly conduct of their business without fear of arbitrary interventions by authorities. The federal and provincial governments, conscious of these facts, have been introducing the necessary measures through its Mineral policies; 1995 & 2012⁷.

⁷Bringing Mining in Pakistan to International Standards- Pakistan Mineral Working Group

2.3 MINERAL POLICY AND REGULATIONS

The implementation of the First National Mineral Policy (NMP 1995) at both Federal and Provincial levels paved the way for an expansion of mining sector activity in Pakistan. The implementation helped attracting foreign investment in the mining sector. Pakistan has a large base of industrial minerals, and the growing interest from international mining companies carries great potential for the rapid development of the sector.

A new National Mineral Policy (NMP2) was formulated in 2012 to ensure its alignment with contemporary practices and enhance the international competitiveness of Pakistan's mining sector. The new policy is intended to serve as a clear and detailed representation of governments' objective of improving the international competitiveness of the mineral sector in Pakistan. NMP-2 seeks to provide the basis for addressing these and other challenges, as well as responding to important government priorities and commitments.⁸

The broad goals are to enhance the contribution of the mineral sector to the GDP by efficient and sustainable development of mineral resources through private sector investment for the benefit of the people of Pakistan. In order to achieve this goal, the National Mineral Policy – 2 aims to achieve the following:⁹

- a) *Enhancement and sustenance of revenue flow to the Provincial and Federal Governments.*
- b) *Creation of an investment-friendly climate to enhance Pakistan's international competitiveness;*
- c) *Optimization of exploration, development and exploitation of minerals;*
- d) *Mitigation of adverse environmental effects of mineral development;*
- e) *Generation of mass scale employment and socio-economic uplift through enhanced skills, sustainable mineral development, technology transfer and regional infrastructure development;*
- f) *Administrative restructuring of relevant federal and provincial mineral sectors;*
- g) *Generation of geological data, development of a national Cadastre and provision of online accessibility to such data;*
- h) *Ensuring safe mining operations and safety and security of investors.*

2.4 CONSTITUTIONAL POSITION ON MINERALS

Minerals other than oil, gas and nuclear minerals and those occurring in special areas (FATA, Gilgit-Baltistan, AJK and ICT) are a Provincial subject under the Constitution. Provincial Governments/federating units are responsible for regulation, detailed exploration, mineral development and safety concerns in these operations, whereas geological/geophysical survey and mapping, mineral identification, regional exploration, national and international coordination

⁸ Ibid

⁹ National Mineral Policy 2012 (NMP2)

and formulation of national policies and plans are federal responsibilities. In line with this Constitutional framework, the Federal and Provincial Governments jointly endorsed this Policy, which provides for appropriate institutional arrangements, a modern regulatory framework, internationally competitive fiscal and regulatory regimes and a programme to expand Pakistan's geological database.¹⁰

The respective Government may, by notification in the official Gazette, make rules for the grant of mineral concessions/titles in respect of any mineral including those underlying the ocean within the territorial waters or the continental shelf of Pakistan.

The provisions of this Policy clearly provide that the continued focus of all activities and decision making will be at the Provincial level while the Federation would provide requisite support and advice to the Provinces to take up the challenges of achieving sustainable benefits from the development of nonrenewable mineral resources.

All federating units of the Islamic Republic of Pakistan commit to the minerals ownership structure and legislation in Pakistan as defined in the Constitution and this Policy.

In addition to defining the federal and provincial jurisdictions and their respected roles and responsibilities, in addition to various administrative mechanisms, to promote the mineral and mining sector, the NMP-2 provides the necessary frameworks for a "Regulatory Regime", in Section 8, and a "Fiscal Regime". Evidently, the goal is to create a business friendly environment in which potential investors are helped to make informed decisions as related to the laws and regulations governing the mineral titles, licenses, lease agreements, environmental protection obligations, taxes and royalties.

2.5 REGULATORY REGIME

Grant and management of mining concessions in Pakistan are regulated by the Regulation of Mines & Oil-fields and Mineral Development (Government Control) Act, 1948 and the related rules made under the Act. The Act and the rules are the main instruments of administration, compliance and dispute resolution in respect of Pakistan minerals. The Federal Government and the four provincial governments both administer the Act through their separate rules with respect to minerals assigned to them. Thus, the Federal Government administers the Act in respect of oil, natural gas and nuclear minerals, and the Provincial Governments administer it in respect of other minerals.¹¹

2.6 SECTOR DEVELOPMENT COMPANIES

There are various sector development companies mostly either Government owned or Government backed autonomous bodies engaged in sector facilitation, mining and drilling. These companies perform important role in making immediate availability of key services and expertise/equipment. A list of important is as follows:

¹⁰ National Mineral Policy 2012 (NMP2)

¹¹ Bringing Mining in Pakistan to International Standards- Pakistan Mineral Working Group

2.7 PAKISTAN MINERAL DEVELOPMENT CORPORATION

The Pakistan Mineral Development Corporation (PMDC) is an autonomous corporation attached to the Ministry of Petroleum and Natural Resources, Government of Pakistan. It was created in 1974 with an authorized capital of Rs 1,000 million to expand and help mineral development activities in the country. The Pakistan Mineral Development Corporation was previously known as Resource Development Corporation.¹²

2.8 PAKISTAN GEMSTONE AND JEWELRY DEVELOPMENT COMPANY

The Company was established to develop the gem and jewelry industry of the country from mine to market, and to enhance its competitiveness internationally by facilitation, technology up-gradation and skill development. The centre-point of the gemstone industry in Pakistan is Khyber-Pakhtunkhwa. Gems and precious stones, which are mined and polished in Pakistan, include actinolite, hessonite, rodingite, agate, idocrase, rutile, aquamarine, jadeite, ruby, amazonite, kunzite, serpentine, azurite, kyanite, spessartine (garnet), beryl, marganite, spinel, emerald, moonstone, topaz, epidote, pargasite, tourmaline, garnet (alamandine), peridot, turquoise, grossular, quartz (citrine & others) and vesuvianite.¹³

PGJDC provides training in gemstones and jewelry making. It has worked to seek affiliation with different technical boards. The Company has established fully functional Training Centers in Karachi, Lahore, Quetta, Peshawar and Gilgit; Gem Exchanges in Peshawar and Quetta; and Gem Labs in Karachi, Lahore, Gilgit, Peshawar and Quetta. More than 5000 individuals were trained across the country in the areas of gems and jewelry through more than 350 training programs.

2.9 PUNJAB MINERAL DEVELOPMENT CORPORATION (PUNJMIN)

PUNJMIN is the state mining corporation of Punjab and exploits nearly all minerals found in the Province. In 2011-12, the Corporation had sales in excess of PKR 550 million with profits of PKR142 million. The Corporation has a number of drilling rigs and owns 27 mining leases in the province, which produce coal, salt, bauxite, silica sand and gypsum. It is one of the largest producers of Gypsum and Salt in the country. Investors can partner with PUNJMIN for mining operations in the Province.¹⁴

2.10 PAKISTAN STONE DEVELOPMENT COMPANY

PASDEC was established as subsidiary of PIDC for development of Model Quarries, Up-gradations, Machinery Pools, Common Facility and Training Centers (CFTC's) & Warehouses. PASDEC's vision is "To make Pakistan globally competitive & socially responsible Player of the International Dimensional Stone Industry". PASDEC short term goal is to develop Quarrying sector of Pakistan to reduce quarrying wastage from 85% to 45%.¹⁵

¹²<http://www.pmdc.gov.pk/pmdc>

¹³<http://www.pgjdc.org>

¹⁴www.punjmin.com

¹⁵<http://www.pasdec.com.pk/Default.aspx>

At initial stage, five Marble cities projects of Karachi, Risalpur, FATA, Gaddani & Islamabad projects were initiated by PASDEC. Later on, Marble City Chitral and Loralai were also included in this plan. PASDEC has following major objectives:

- *Raise Value Chain Productivity*
- *Investment in Workforce Development*
- *Export Marketing*
- *Promote Strategic Partnerships (J.V. & D.F.I.)*
- *Develop Industrial & Market Information*

3. MINES AND MINERAL SECTOR- BALUCHISTAN

Area wise Baluchistan is the largest province of the country constituting about 42% of the total land mass and has been endowed by nature with substantial mineral wealth which should be explored and developed.

Baluchistan is the richest province in Pakistan in terms of minerals with large reserves of copper, gold, iron ore, chromite, marble and coal, amongst others. Unfortunately, most of these deposits remain largely un-exploited owing to various reasons, including law & order situation. The mining sector holds tremendous promise for creating much needed resources for the development of the province as well as creation of jobs for the local population, in not only the mining sector, but also in the spin- off and downstream processing industry such as cement, marble value addition, steel, etc.¹⁶

As part of the comprehensive development Strategy of 2013-20; Baluchistan acknowledges the structural weaknesses which impede the exploitation of mineral resources, such as a lack of adequate infrastructure, security related challenges, difficult terrain, significant gaps in knowledge and skills and underdeveloped regulatory framework governing the mining sector.

Table 7: Explored deposits (virgin deposits) with most economical potential		
S No.	Mineral Deposit	Estimated Reserves (Million Tons)
01	Reko Diq (Copper & Gold)	215
02	Chickendiq (Iron Ore)	86
03	Nau Kundi (Chromite)	78
04	Raskoh (Chromite)	168
05	Chilghazi (Iron Ore)	188
06	Jino (Copper)	143
07	Wad (Chromite)	121
08	Haji Goth (Copper)	179
09	Bella (Manganese)	67
10	Kalat (Flourite)	35
11	Surmai (Lead & Zinc)	135

The National Mineral Policy focuses on all activities and decision making at the Provincial level while the Federal Government would provide requisite support and advice to the province to take up the challenges of achieving sustainable benefit from the development of identified mineral resources. At present many foreign Companies have entered into agreement and are being involved in exploration/exploitation i.e, B.H.P Billiton, Tetheyan Copper Company, MCC, Lake Resources NL, MRDL, Benway, Paige Limited, Berack Gold, Antafagusta etc.¹⁷

¹⁶Comprehensive Development Strategy 2013-2020; Baluchistan

¹⁷ White Paper 2012-13, Baluchistan



Figure 2: Baluchistan Map

If properly explored, evaluated and developed the mineral sector can play an important role in the economic development of this province as well as the country. Presently all the mining activities are being carried out through private as well as public sector and foreign investors. More than 50 metallic and non metallic minerals have been discovered in the province. Metallic minerals are Chromite, Copper, Gold, Silver, Iron, Lead, Zinc, Manganese and Antimony whereas the non metallic include Barite, Fluorite, Calcite, Magnesite, gypsum, pumice, quartz, asbestos etc. Coal and Dimension stone such as Marble both Onyx & Ordinary, Granite, Gabbro Basalt and Dunitite are also available in large quantity.¹⁸

Following are the details of mineral production in Baluchistan during 2010-12.

Table 8: Mineral Production in Baluchistan			
S No.	Minerals	2010-11 (TONNES)	2011-12 (TONNES)
01	Coal	1387492	1364182
02	Marble (Onyx)	78512	80159
03	Marble (Ord)	605468	750770
04	Chromite	106430	108658
05	Baryte	31259	47744
06	Limestone	1234202	1023466
07	Fluorite	198	351
08	Granite	82	175
09	Shale	992205	1689994
10	Serpentine	2542	1378
11	Pumice	4036	2461
12	Conglomerate	138	91
13	Ordinary Stone	6630	7185
14	Dolomite	137	107
15	Magnesite	1155	985
16	Manganese	413	384
17	Quartzite	207	198
18	Clay	45	35
19	Iron Ore	205545	196091

¹⁸ Ibid

Table 8: Mineral Production in Baluchistan			
S No.	Minerals	2010-11 (TONNES)	2011-12 (TONNES)
20	Copper (Blister)	15672	17931
21	Diorite	119	94
22	Gniess	50	60
23	Rhyollite	206	101
24	Basalt	0	550
25	Lead	1344	1488
26	Zinc	11123	13232
27	Gabro	102	142

Despite vast reserves of all type of minerals, the province is earning only 538.00 million Rupees as Rent and Royalty on minerals. This is due to a lack of adequate resources provided for exploration such as lack of infrastructure, non-availability of Mineral based industry, legal and technical expertise etc. All the minerals extracted from Baluchistan are transported to down country in raw form, due to non-awareness of Mineral Based Industry. Establishment of Mineral based industry could not only create the job opportunities but can also generates the revenue and taxes to the Government exchequer¹⁹.

The World Bank, on the request of Government of Pakistan, has agreed to develop the Mineral Sector and to extend Techno-economic Assistance for Mining and Technical Assistance Project (MTAP) and selected the province of Baluchistan to start with, having good mineral potential areas. Major components of the project are as follows: ²⁰

- i. Geo-data Centre.
- ii. Regulatory Frame Work,
- iii. Institutional capacity building.
- iv. Local social economic uplift.
- v. Project Management & Coordination.
- vi. Project Logistic support

3.1 REGULATORY FRAMEWORK

The provincial government is responsible for the regulation of all minerals except for Oil and Gas. Following the passage of the 18th Amendment, there is now a shared ownership of even Oil and Gas resources between the federal government and the relevant province.

The existing regulatory framework is based on the following²¹:

1. Baluchistan Mineral Rules 2002 (BMR). These Rules were enforced on 08-03-2002.

¹⁹ White paper 2012-13, Baluchistan

²⁰ Ibid

²¹ Ibid

2. Baluchistan Minor Minerals Concession Rules 2000 (enforced on 12-5-2000)

The Baluchistan Mineral Rules 2002 provide following four types of mineral titles namely:

i. Reconnaissance License.

ii. Exploration License.

iii. Mineral Deposit Retention License.

iv. Mining Lease (L.S.M) as well as Small-Scale Mining (Prospecting License/Mining Lease).

About 1250 Mineral concessions, i.e, Prospecting Licenses and Mining Leases of 45 minerals, have been granted for small scale mining while 36 Mineral Titles, i.e, R/L, E/L and M/L, were granted under large scale mining and are being involved in the mineral exploration/exploitation in the province.

3.2 INVESTMENT AND PROJECTS IN BALUCHISTAN'S MINING SECTOR

The Baluchistan Government hopes to turn its potential of mines and minerals into the economic mainstream. The Mines and Mineral Development Department (MMDD) was envisaged following investment through various projects during 2010-15 as per following:

Table 9: Projects in Balochistan	
Name of Project	Rupees in million
Three Cement Plants	450.00
Marble Cutting and Polishing Units.	500.00
Value added Chromite Plant.	400.00
Thermal Power Station.	30.00
Others.	35.00
Total	1,415.00

There are three major projects planned/ under progress with the assistance of World Bank. The details are as follows:

Table 10: World Bank Projects	
Name of Project	US \$ in million -2010-2015
Geo-Data Production	21.90
Regulatory Frame work and Institutional Capacity Building	94.00
Local Social and Economic Development	101.00

Baluchistan is keeping an eye on foreign investment to accelerate its mines and mineral potential. Following are major project investments envisaged by the MMDD during 2015.

Table 11: Foreign Investment		
Name of Company	Investment at present in US Dollars	Investment by 2015 in US Dollars
M/s Tethyan Copper Company.	100.00 Million	300.00 Million
M/s Lake Resources Australia.	100.00 Million	180.00 Million
M/s Metallurgical Construction Co. at Duddar.	80.00 Million	100.00 Million
M/s MCC Saindak	14.00 Million	20.00 Million
M/s Paige Limited U.K	80.00 Million	120.00 Million
M/s Natvus Germany	100.00 Million	150.00 Million
M/s Benway Corporation U.S.A	50.00 Million	100.00 Million
M/s Gulf Mineral Limited U.A.E	70.00 million	100.00 Million
M/s Antafogasta Copper Company and M/s Tethyan Copper Company (Joint Venture)	1070.00 Million	1500.00 Million

The mines and mineral sector is a vital revenue earning sector for Baluchistan as royalties. Following table reflects the estimated sectoral revenues during 2009-2013. Government of Baluchistan receives royalties based on prescribed rates.

Table 12: Revenue Generated from Mining Sector		
S.No	Year	Increase in Revenue Generation in Million Dollars
1.	2009-2010	US\$ 210-256
2.	2010-2011	US\$ 256 -449
3.	2011-2012	US\$ 449 -577
4.	2012- up to March 2013	US\$ 360

3.3 DEPARTMENT OF MINES AND MINERAL DEVELOPMENT

Following the implementation of National Mineral Policy of 1995, the Government of Baluchistan created its department of Mines and Mineral Development in 2002 to manage its mines and mineral sector.

Main functions of the Mines and Mineral Development Department:

- To facilitate and provide services for the exploration of Mineral Resources province
- Encouraging Foreign Investment in exploration/ exploitation of large scale mining

- Encouraging / pursuance for the establishment of mineral based industry within province
- Establishment of more export processing zones as result mine owner/ business community in mining will be benefitted
- To provide infrastructure facilities to the mining areas
- Generate/ increase the revenue in the mineral sector
- Strengthening of departmental capacity

Following is the organization set up of Department of Mines and Mineral Development of Baluchistan. The department is headed by a Provincial Secretary. The wings of the Department directly report to the Secretary; namely

- 1) **Directorate General of Mines and Mineral,**
- 2) **Inspectorate of Mines and**
- 3) **Mines Labour Welfare Organization.**

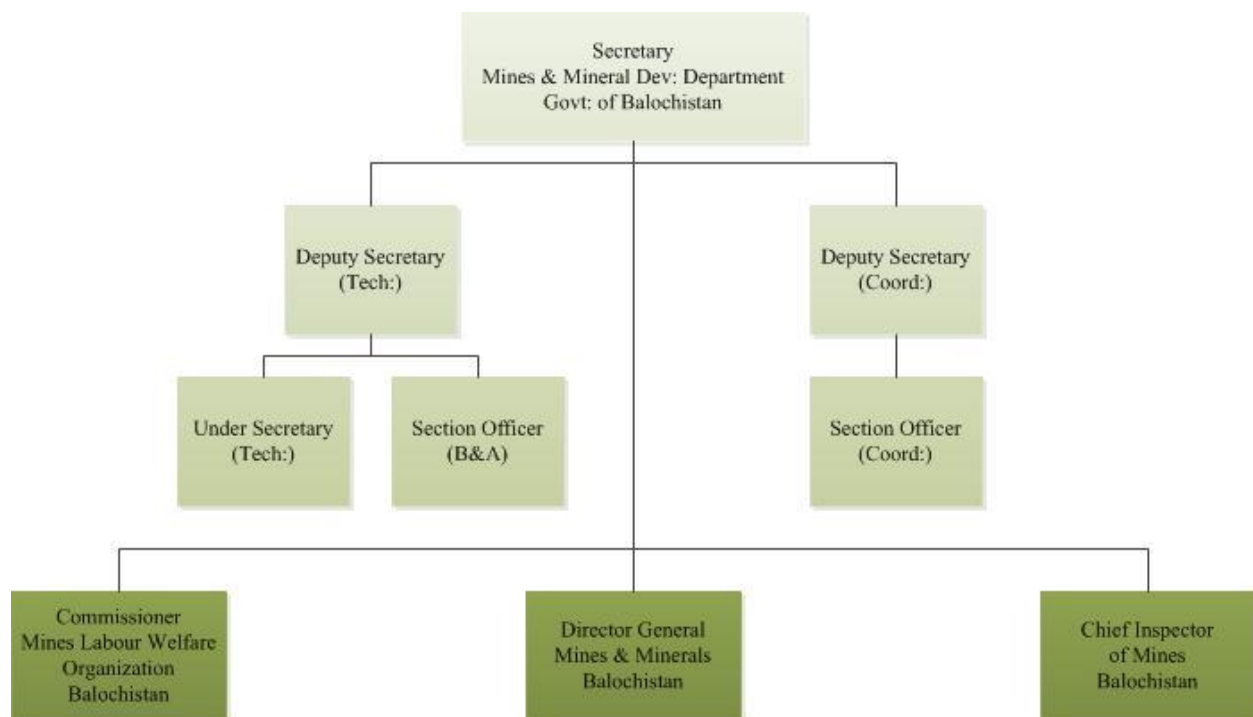


Figure 3: Organizational Chart - Dpartment of Mines and Mineral Development Baluchistan

Three wings are working in the mines and mineral development department to achieve the objective assigned to the department and perform following functions

1. Directorate General of Mines and Mineral
2. Inspectorate of Mines

3. Mines Labour Welfare Organization

3.3.1 Directorate General of Mines and Mineral Development

- Grant of Concessions of Minerals
- Regulations of Baluchistan Mineral Rules 2002.
- Collection of royalty and rent and resolving the boundary disputes.
- Technical assistance / advice to the Mines owners for scientific exploration of Minerals.
- Development Projects.

3.3.2 Inspectorate of Mines, Baluchistan.

- To ensure the enforcement of the safety law applicable to mines for the safety of worker.
- Inspectorate of mines has the following two wings :-
 - Inspection Wing
 - Mines Rescue and Training Wing
- Inspection wing is responsible for periodic inspection.
- Prosecution of the defaulters for the safety provision inspections
- The following five regional offices under the supervision of one inspector of Mines and one junior Inspector of Mineral on district level have set up for :
 - Inspector of mines.
 - Conduction inquiries in mines accidents.
 - Disciplinary action for violating the safety provisions of the mines Act 1923, Rules and Regulation made there under.
- In order to provide various facilities to Mine worker and their families government enacted the law of excise duty on Mineral (Labour welfare) Act 1967.

3.3.3 Mines Labour Organization

- The mines Labour organization collects excise duty (Cess) on dispatch of various mineral at various rate so fixed by the federal Government
- The excise duty recovered by the organization is deposited in Government Treasury under Federal head of account.

- The mines Labour Welfare Organization is related with the Mining Worker
- Welfare Measure for Mines Worker such as Education, Health, Drinking safety water supply and recreation are financed through budget release by Provincial Government.
- These schools are providing education to the mine worker children free of cost.
- About thirty thousand Mines Worker and their family members are getting health facilities from these hospital and dispensaries in different parts of Balochistan.
- At the present the main mining area are situated in Quetta, Loralai, Chagai, Bolan, Sibi, Khuzdar, and Lasbella districts.

3.4 BALUCHISTAN MINOR MINERALS CONCESSION RULES 2000

Under these Rules royalty on minor mineral are collected through open auction. The business process to award Mining Concession is defined as follows:²²

1. Registration of application

2. Every application is required to accompany:

- i) Earnest money as prescribed by the Government;
- ii) A copy of:-
 - a. The National Identity Card of the Applicant;
 - b. Income tax registration;
 - c. The dully registered partnership deed where the application is a partnership firm;
 - d. Each document of immovable property and financial viability of the application as prescribed by the Licensing Authority; and
 - e. the articles and memorandum of association along with evidence of paid up capital, if the application is a Company.

3. Acknowledgement of application: The date and time of application is recorded. The applicant is informed of the date and time of auction.

4. Constitution of an auction Committee: Government constitutes an Auction Committee consisting of members in each District, to conduct auction of leases for minor minerals.

5. Period of Lease. The period of a lease shall not exceed five years.

²²Baluchistan Minor Minerals Concession Rules 2000 (This section is adopted from the Department of Mines and Mineral Development's Record and Concession Rules)

3.4.1 Realization of Royalty

Realization of Royalty is regulated under the Baluchistan Minerals Rules 2002 (BMR 2002). Royalty is payable on half yearly basis on prescribed flat rate per metric tonne on the first day of January and first day of July each year on the Mineral dispatched by Mineral Concessionaires. For large scale mining royalty is payable by the Foreign investors in percentage.

For the purpose of Royalties, mineral are grouped as follows:

- A. Construction and industrial minerals group
- B. Precious stones group; diamonds, emeralds, rubies and sapphires
- C. Precious metals group; gold, silver, platinum, palladium, osmium, rhodium, iridium and ruthenium
- D. Semi-precious stones group
- E. Base metals group
- F. Other minerals; any other minerals not specified in above categories

3.5 BALUCHISTAN MINERAL RULES- 2002 (BMR 2002)

Under Baluchistan Mineral Rules 2002 (BMR-2002); there are two types of rules

- 1. Small Scale Mining (S.S.M)
- 2. Large Scale Mining (L.S.M)

3.5.1 Small Scale Mining (S.S.M)

Mining where the capital investment is less than Rs.300 million (or such other amount as may be determined by the Licensing Authority from time to time) comes under the category of small scale mining which is confined to Pakistani Nationals. A person may not hold a mineral concession i.e, Prospecting License (PL) or Mining Lease (ML) under this category unless the person is:

- 1) A citizen of Pakistan; or
- 2) A company formed by or under a Law for the time being in force in Pakistan whose articles of association contain a provision that
 - a. *Only citizen of Pakistan may own shares in the Company.*
 - b. *Only another Company whose articles of association contain such a provision may own shares in the Company; or*
 - c. *Only a citizen of Pakistan and a company referred as above (ii) may own shares in the Company.*

On objection, Certificate from the concerned District Coordination Officer is required to be provided by the applicant for the category of small scale mining only.

To improve the working of small-scale mining:

- I. The Provincial Inspectorates of Mines will provide basic personal safety equipment to small-scale mine operators on a no-profit no-loss basis. Failure by the mine operators to acquire the prescribed safety equipment may result in closure of their operations.
- II. Corporate merger of small-scale mine operators will be encouraged.
- III. Provincial Inspectorate of Mines will monitor the working of small mines and ensure compliance with the provisions of the Mines Act and of environmental protection laws. Penalties will be imposed for violation of these provisions.
- IV. Small-scale mines will be required to carry out or participate in collective environmental rehabilitation programmes introduced by regulatory agency.

3.5.2 Large Scale Mining (L.S.M)

Large scale mining /Exploration can be carried out both by National and International Mining Exploration Companies which are financially sound and having reasonable experience in the field of mining and exploration.

Four types of Mineral Titles can be granted under the large scale mining:

1- Reconnaissance License (RL)

2- Exploration License (EL)

3- Mineral Deposit Retention License (MDRL)

4- Mining Lease (ML)

3.5.2.1 Reconnaissance License (RL)

- To enable the mining companies to reconnoiter large areas in a short span of time using modern techniques RL will be granted over an area of 100 to 10,000 sq km in respect of a mineral or a group of minerals.
- Unless stipulated otherwise, the license will be non-exclusive for a period of 12 months and will not be renewable. However, the Licensee will have the right to an exploration license over 10% of the area held under an RL provided that the criteria for the grant of such a License and other requirements of the Law are met.

- The Licensing Authority will take a decision on the application for an RL within 120 days from the date of filling of complete application. The application fee for an RL will be Rs.15,000.
- The Licensee will be obligated to carry out an approved work program and comply with other conditions of the RL.

3.5.2.2 Exploration License (EL)

- An exploration License will be granted over an area not exceeding 1,000 sq.km. for a period not exceeding three years where the applicant meets the specified criteria. The application must provide adequate information about the applicant, description and a sketch map of the area, work program and expenditure to be undertaken and technical and financial resources available to the applicant.
- Subject to satisfactory completion of work program and compliance with other conditions of the EL, it will be renewed for a period not exceeding three years over 50% of the area of the original EL. Where it can be demonstrated that a further extension is necessary for the completion of full feasibility study prior to applying for a mining Lease, the EL will be renewed over 50% of the area held for a period not exceeding 3 years.

Application fees for EL will be Rs.100, 000 and fee for each renewal will be Rs.150,000. In addition, rent of the land over which the license is granted will have to be paid @ Rs: 1000 per Sq.Km. The rent will increase progressively each year.

- Where more than one application are made in respect of the same area, the Licensing Authority shall make a decision on the grant of an EL to one of the applicants on the basis of the best minimum work program submitted and other financial terms offered and demonstrable technical and financial competence to execute the work program and meet the other obligations of the EL, regardless of the order in which the applications were received.
- The EL shall not, during the first two years of its term, be assigned or transferred by the Licensee to any party, other than to an affiliate. Assignments to an affiliate will be subject to the prior approval of the Licensing Authority.
- The Licensee shall have the right, after a period of two years, to assign or transfer all or part of its interest in the EL to any third party subject to the prior written consent of the Licensing Authority. Such consent shall not be withheld except for good reasons, for example, where the Licensing Authority is reasonably satisfied that the proposal assignee does not meet the criteria for the grant of an EL.

3.5.2.3 Mineral Deposit Retention License (MDRL).

- On completion of a full feasibility study, if the holder of an Exploration License (EL) can demonstrate that the deposit, though potentially viable, cannot be commercially developed, due to depressed metal/mineral prices utilizing proven technology or with financing on commercial terms which are reflective of current market conditions for other mining projects, he may, within 180 days before the expiry of the EL, apply for a Mineral Deposit Retention License (MDRL).

- The application must be accompanied with full justification, data and the prescribed fee. The application for an MDRL will have to demonstrate that the exploration operation had progressed as far as practicable and that the applicant is able and willing to comply with the conditions of the MDRL and has complied with the terms and conditions of the EL.

The application fee for an MDRL or its renewal will be Rs.100,000 each and the Licensee shall, in respect of the MDRL Area, pay in advance, for each year, the rent applicable for the corresponding period of the EL.

- The application for an MDRL will be considered within 180 days and may be granted for a period not exceeding two years subject to specified conditions. It may be renewed for a period not exceeding one year subject to payment of a renewal fee and land rent. However, the Licensee must justify annually to the Licensing Authority the basis for continuation of renewal of the MDRL.
- The data generated by the Licensee will be placed on an open file and the feasibility study will be placed on a confidential file at the office of the relevant Licensing Authority and will be open to bona-fide interested third parties for inspection.
- In the event of another company applying for a mining Lease over a deposit covered by MDRL, the Licensee will have the right of first refusal to obtain a mining lease. If the Licensee is unable to match the terms offered by the third party, the MDRL shall stand terminated.

3.5.2.4 Mining Lease (ML) Large Scale Mining

- The holder of an EL or an MDRL may apply for a mining Lease over an area subject to a maximum of 250 sq.km. Within his EL or MDRL in respect of the mineral/minerals discovered.
- The application shall be accompanied by detailed information including technical and financial resources available for development of the mine, work program for development and operation of the mine, production schedule, financial plan, environmental protection plans, proposals financing for procurement and use of local goods and services, training of nationals and the prescribed application fee.
- The application will be considered, in accordance with specified criteria within 120 days after receipt of the application or receipt of any additional information requested. The license will remain valid while the application is under consideration.
- The Licensing Authority shall not unreasonably refuse an application for the grant of an ML. Where the Licensing Authority considers that the applicant has satisfied the specified criteria for assessment and grant of an ML, the ML will be granted.
- The Licensing Authority will not refuse an application by a licensee for an ML unless the Authority has notified the applicant of the proposal to refuse the ML and has given the applicant a reasonable opportunity to modify the proposals or mining plans or make representation or otherwise remove the ground for refusal.
- The application fee for a Mining Lease or its renewal will be Rs.100, 000 each and the land rent will be Rs.3000 per sq.km/year to be paid in advance each year.

- The Mining Lease (ML) will be granted for the lesser of a period of 30 years or the estimated life of the mine. A Mining Lease may be renewed for a period not exceeding 10 years or the life of the mine whichever is lesser in the light of the circumstances prevailing at that time.
- Where an application for a Mining Lease of Large Scale Mining (LSM) is made by an applicant not holding an Exploration License (EL) or Mineral Deposit Retention License (MDRL), the decision will be made within 180 days, unless extended further up to 180 days by the Government.
- The Lessee will be obligated to carry out mining operations in accordance with good international mining industry practice, provide acceptable working conditions and take measures to protect health, safety and welfare of employee and the environment. The Lessee will be required to commence mining operations within six months of the grant in accordance with the approved mine development plan.
- A lessee shall have the right to assign a Mining Lease of Large Scale Mining (L.S.M) with prior consent of the Licensing Authority. Such consent will not be unreasonably withheld or delayed, if the proposals assignee meets certain specified criteria and conditions similar to those applicable for assignments of ELs.
- A lessee shall have the right to market and export minerals or mineral products subject to satisfaction of the internal requirements of Pakistan.
- The price to be paid for any minerals or mineral products purchased by the Government shall be the fair market price. The fair market price shall be determined by agreement on the basis of specified criteria and, failing agreement, by reference to a mutually acceptable expert or to arbitrators.

3.6 MAJOR MINERALS AND MINERAL PROJECTS

Following are the explored deposits (virgin deposits) in Baluchistan with the most economical potential²³:

Table 13: Explored deposits (virgin deposits) in Baluchistan		
S No.	Mineral Deposit	Estimated Reserves (Million Tons)
01	Reko Diq (Copper & Gold)	215
02	Chickendiq (Iron Ore)	86
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06	Jino (Copper)	143
07	Wad (Chromite)	121
08	Haji Goth (Copper)	179
09	Bella (Manganese)	67
10	Kalat (Flourite)	35
11	Surmai (Lead & Zinc)	135

²³ Geological Survey of Pakistan

3.6.1 Saindak Copper / Gold Project

The Saindak Copper-Gold Mine is located near Saindak town in Chaghai district. These deposits were discovered back in 1970s in collaboration with a Chinese engineering firm.

The Saindak Copper-Gold Project was set up by Saindak Metals Limited (SML), a company fully owned by the Government of Pakistan. Pakistan and China signed a formal contract worth \$350 million for development of Saindak Copper-Gold mine.

The mine was leased for a 10 year period to MCC Resources Development (Pvt.) Limited (MRDL). The lease between SML and MRDL expired in October 2012, and has now been extended for another 5 year period, till October, 2017. As agreed between the GoP and GoB, the ownership of the Saindak Project would get transferred to the GoB on expiry of the initial 10 year lease contract, in October, 2012. This transfer, however, has not taken place as yet.

The Saindak mine has total estimated reserves of 412 million tons, of which an estimated 1.69million tons are mineable. Saindak has the capacity of producing roughly 15,800 tons of copper blister, 1.47 tons of gold and 2.76 tons of silver, annually.

3.6.2 Reko Diq

Reko Diq is a small town in Chaghai district, 70 km north-west of Nokundi, close to Pakistan's border with Iran and Afghanistan. The area is located in Tethyan belt that stretches all the way from Turkey and Iran into Pakistan.

Reko Diq has an estimated 56-year life span and has one of the largest reserves of copper in the world. The deposit at Reko Diq is large low grade copperporphyry, with total mineral resources of 5.9 billion tons of ore with an average copper grade of 0.41% and gold grade of 0.22 g/ton.

From this, the economically mineable portion of the deposit has been calculated at 2.2 billion tons, with an annual production estimated at 200,000 tons of copper and 250,000 ounces of gold, from 600,000 tons of concentrate.²⁴

3.6.3 Coal

Coal mining in Baluchistan²⁵ started on small scale before independence, in Khost- Shahrigh-arnai area, and has been increasing with time. Coalfields are generally located in remote and mountainous areas where infrastructure is either minimal or absent.

The province has significant reserves of coal. The coal reserves here, have a high content of sulphur and tar, which reduces its utility for industry such as Steel, as once this coal is burnt, it emits less coke, which is required for hot metal manufacturing.

²⁴Board of Investment, Government of Pakistan

²⁵ Adopted from Comprehensive Dev Strategy 2013-2020; Baluchistan, Reports of MMDD

Consequently, the present use of such coal mined in Baluchistan is largely confined to brick kilns and some blending with imported coal in the cement industry. Establishment of a coal washing plant with upgrade in quality and enhances its use for especially power generation.



Figure 4: Baluchistan Coal

The reported reserves of coal in Baluchistan are 268 million tones. Baluchistan coal is classified as sub-bituminous to bituminous and the heating value ranges from 9,637 to 15,499 Btu/lb. It has low ash and high Sulphur content, and can ideally be used for thermal power generation and as industrial fuel (cheaper source as compared with imported furnace oil).

Coal reserves in Khost, Sharig and Harnai, the largest reported reserves in Baluchistan, have low moisture content, ranging between 2% and 11%, whilst Sulphur content varies between 3.5% and 9.5%.

3.6.4 Iron Ore

Recent geo-scientific studies have established existence of about 200 million tons of iron ore, at Dilband, Mastung, ranging in iron content from 40% to 50%. The deposits have favorable Mineralogical composition and are located near existing infrastructure. However, Pakistan Steel Mills uses only a small proportion of iron ore (only around 10%, which is mixed with the imported iron ore) from Baluchistan due to low level of FE content.

Similarly, Tuwairqi Steel Mills, the newly established DRI plant is also expected to mainly use the imported iron ore. At present, certain quantities of iron ore are being exported, but reliable data of exports is not available.

3.6.5 Marble

Marble is also another very important mineral resource of the province. As per MMDD, large reserves of good quality marble are present in Chaghai, Zardkan, Siah-Chang, Jhulli, Patkok, Maskichah, Zeh, Chilgazi and Buttak. Onyx reserves are present in Chaghai, Bolan, Lasbela and Khuzdar. The marble from Balochistan is of superior quality and is used in the local construction industry. With improved technology and better marketing practices, total export of marble and onyx is projected to increase from US\$7 million to US\$ 40 million. Given the marble zone's close

proximity to Karachi and Gwadar port, the province has an edge over marble mines in Khyber Pakhtunkhwa.²⁶

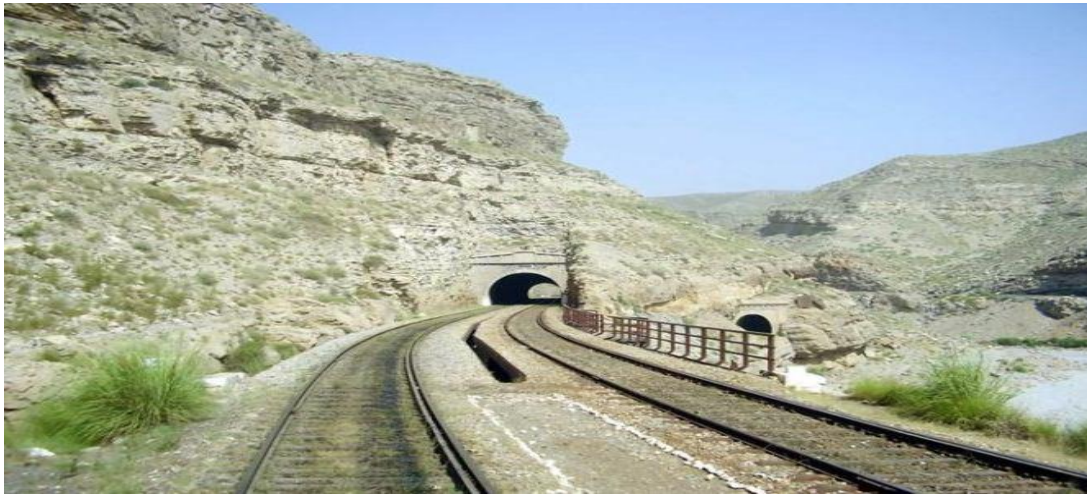


Figure 5: Baluchistan Marble

3.6.6 Chromite

Chromite is the source of chromium used commercially, and as an alloying element. Balochistan is endowed with huge reserves of chromite. The first discovery was made at Muslim Bagh and Khanozai in district Killa Saifullah, in 1901. Reserves have also been found in Zhob, Chaghi, Kharan, Khuzdar and Lasbela districts. The most important among these are the Muslim Bagh deposits, Kabbar (Wadh), Pat Nadi and Sonaro deposits in Khuzdar district.

Chromite mining has not been undertaken systematically and is quite disorganized. It is mined by both open pit and underground methods. In Muslim Bagh, Ras Koh Range and Wadh areas, chromite is mostly mined by open pit method. Use of donkeys for hauling the ore from underground is still widely practiced. The ore mined is transported by trucks to Karachi where it is crushed and packed in bags for export. China is one of the largest importers of chromite from Balochistan. The ore concentrate is used to make ferrochrome, which is in turn used for steel making. Chrome is also used in the production of chromic acid by chemical industries and in the creation of refractory bricks.²⁷

3.6.7 Lead / Zinc

An estimated 27 million tons of lead and zinc deposits are present in Baluchistan, in the Khuzdar and Lasbela districts. Lead-zinc ore is present in Duddar, Shekran, Malikhorn, Gunga, Surmai and Mithi areas, with the single largest reserve of the mineral found in Duddar.

The Duddar Project is the first nonferrous metal mine adopting underground mining technology in Pakistan. The mine has been leased to MCC Resources Development (Pvt.) Limited (MRDL), of

²⁶ Adopted from Comprehensive Dev Strategy 2013-2020; Baluchistan, Reports of MMDD

²⁷ Ibid

China, in December 2003. The output of lead and zinc ore reached 2,268 tons and 19,457 tons, respectively, In 2011.

Lead is used in storage batteries, cable covering, lead pipe manufacturing, pigments, ammunition, bearing metals, and casting of a few alloys. On the other hand, zinc is used for the manufacture of galvanized iron products, like G.I. sheets and water pipes, to protect the metal against rusting. It is also used in casting alloys like brass, bronze, German silver, etc. Zinc oxide is also used in the rubber industry.²⁸

3.6.8 Limestone

Limestone is a major sedimentary deposit, and Baluchistan has vast resources of the mineral, extending from the coastal region near Karachi to as far north as Chaghi and Zhob. Several hundred meters thick layers of limestone occur in the Chiltan Formation in Quetta.

In particular, the Harnai, Sor Range, and Spintangi areas have large reserves. Limestone is primarily mined via open pit method. It is the main raw material for cement, and is also used in the manufacture of bleaching powder, glass, soaps, paper, paints and lime. Often, limestone is painted on barks of trees to counter pests and termite attacks. The mineral is also widely used to aerate soil and treat salinity.²⁹

3.7 TECHNOLOGY AND MINERAL SECTOR

Mining sector is not much developed in Baluchistan. There are only few projects where latest technology has been implemented. However, in few major Joint Venture projects, use of technology has caused a tremendous improvement in mining operations.³⁰

At present, in Baluchistan the following projects are using latest technology:

- ***Saindak Copper & Gold Project***
- ***Duddar Lead & Zinc Project***
- ***Dalbadeen Iron Ore Project***

Following are the practices relating to Technology in Baluchistan:

3.7.1 Communication inside the Mines:

In mechanized mining projects, electronic devices are used like radio and etc. whereas in less developed mining projects no such technology is used. Mostly hand signals are used in noisy environment.

²⁸ Ibid

²⁹ Adopted from Comprehensive Dev Strategy 2013-2020; Baluchistan, Reports of MMDD

³⁰ Feedback obtained by Project Data Collection Team

3.7.2 Safety Standards inside the Mines:

The department of Inspectorate of Mines has developed some safety standards. The mine owners and engineers are liable to fulfill such standards. The inspectorate department's officials pay frequent visits in order to ensure the safety standards are being followed or not.

3.7.3 Supports utilized inside the Mines to support the roof:³¹

In underground mines mostly wooden props are used to support the roofs. However, in some projects steel arches and roof bolts are adopted to support the roof.

3.7.4 Type of ventilation (Natural/Artificial) in Mines and dangerous gases the Mines³²:

In most of the underground Mining projects artificial ventilation is adopted. In which large size fans are installed at the mouth of mines in order to supply fresh air inside the mines. For determination of dangerous gases few digital types of equipment are utilized, like Methanometer and etc.

3.7.5 Methods of Mining are utilized to extract minerals from the Mines³³:

In underground mining, mostly Long wall Mining Method is used. For surface mining, mostly Open Pit and Quarry Methods are used. The inspectorate department also arranges the trainings and short courses in order to produce skilled labors and expert officials.

3.8 GEOLOGICAL SURVEY OF PAKISTAN (GSP) AND BALUCHISTAN³⁴

Prospecting and Exploration Survey of minerals of Baluchistan: The survey was initiated for prospecting and exploration of minerals of Baluchistan in 1890 by a British Geologist.

- Presently, the prospecting/exploration projects are ceased due to security issues in the province.

Hurdles during prospecting or exploration by GSP in Baluchistan: The GSP has encountered numerous problems while prospecting or exploration. Most notable are security issues, dealing with illiterate and uneducated persons and difficulty in access to remote areas.³⁵

³¹ Feedback obtained by Project Data Collection Team

³² Ibid

³³ Ibid

³⁴ Ibid

³⁵ Ibid

4. MINES AND MINERAL SECTOR-KPK

KPK is dominated by mountainous terrains with a great variety of minerals from marble and granite to other metallic minerals including gold. In a geological sense, KPK is formed of the Kohistan magmatic arc in the north and the Himalayan Crystalline Zone in the south. Minerals found in the region fall mainly into the categories of industrial minerals, dimension stones, gemstones, coal and metallic minerals. A total of 1,300 licenses have been issued in KPK for various minerals to the private sector³⁶.

KPK has important resources of dimensional stones e.g. marble and granite, precious stones and metals, some industrial mineral, energy minerals and salt. There are 100 million tones reserves and one billion tones reserves of two types of marble. Northern districts of KPK have abundant reserves of granite reserves.³⁷

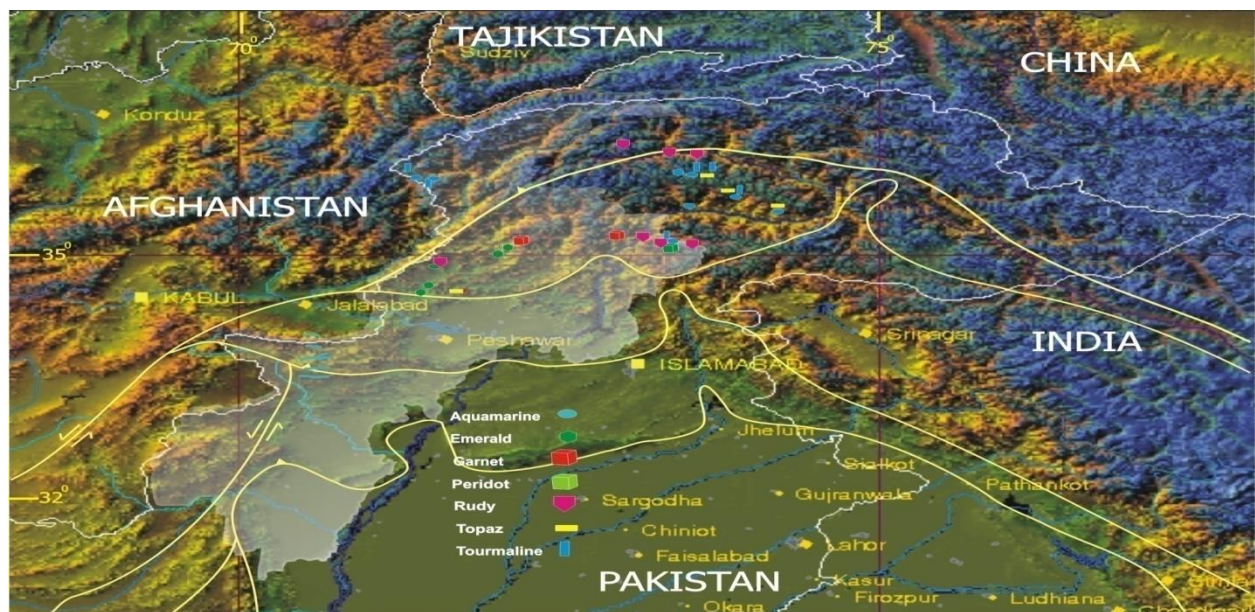


Figure 6: Mineral Landscape of KPK

Economic Growth Strategy KPK acknowledges that resources of marble could form basis for flourishing industry. However, the development of the sector is constrained by the use of inefficient technology i.e. blasting as common extraction technique which results in destruction to the material and lack of skills to finish and polish the stones. The cost of transporting marble from mines to places for polishing and finishing the stone or if exported, gets higher due to dilapidated roads network in those areas. Resultantly, KPK is currently not able to reap the full benefit and value of its resources³⁸.

³⁶ Bringing Mining in Pakistan to International Standards- Pakistan Mineral Working Group

³⁷ Comprehensive Development Strategy 2010-17

³⁸ Economic Growth Strategy, Planning and Development Department, KPK

Following table sums up the mineral production in KPK during 2009-13 in 37 major categories:

Table 14: Mineral Production - 2009 To 2013 (Tons)³⁹						
#	Name of Mineral	2009	2010	2011	2012	2013
1	Antimony	-	-	2	65	-
2	Barytes	5,056	2,077	2,336	2,367	2,028
3	Bauxite	-	-	-	1,475	2,490
4	Bentonite	19,107	21,180	15,558	11,550	9,240
5	Calcite	505	290	-	370	130
6	China Clay	697	7,015	-	-	-
7	Chromite	18,299	16,475	36,192	49,503	26,128
8	Coal	67,635	81,249	89,567	63,044	36,985
9	Copper Ore	-	-	2,700	1,012	-
10	Dolomite	311,858	214,288	248,931	210,923	222,919
11	Emerald	-	2777 cts	4360 cts	1947 cts	187 g
12	Feldspar	55,045	98,643	110,868	60,257	33,574
13	Fireclay	9,567	15,863	19,503	13,395	9,196
14	Fuller Earth	514	253	153	25	-
15	Granite	11,560	12,842	18,907	16,591	14,801
16	Granite Shist	-	-	-	650	-
17	Graphite	825	475	-	3,540	1,050
18	Gypsum	132,034	258,772	514,470	498,810	264,988
19	Industrial Garnet	-	-	123	272	-
20	Iran Ore	9,350	10,307	9,400	15,187	11,765
21	Laterite	65,435	83,747	145,329	171,527	128,204
22	Lead	253	173	943	895	67
23	Lime Stone	8,550,186	9,006,971	9,392,114	10,363,143	8,015,423
24	Magnesite	2,290	5,705	4,815	4,131	5,697
25	Manganese	670	1,460	1,640	610	190
26	Marble	625,988	702,967	778,587	854,237	789,889
27	Phosphate	31,693	68,555	116,524	139,053	98,356
28	Quartz	3,211	2,073	-	-	-
29	Quartzite	1,177	1,177	-	-	-
30	Red Oxide	481	1,059	1,011	767	3,172
31	Salt	106,577	126,055	116,763	111,103	115,353

³⁹ DG Mines and Minerals

Table 14: Mineral Production - 2009 To 2013 (Tons)³⁹

32	Sand Stone	478	583	50,009	50,814	1,600
33	Serpentine	-	-	-	30	86
34	Shale Clay	1,475,296	1,565,937	1,740,091	1,800,843	1,172,610
35	Silica Sand	65,236	37,107	29,228	20,988	16,911
36	Slate Stone	76,656	82,697	100,201	279,825	321,825
37	Soap Stone	93,990	121,650	123,414	95,536	77,356

As per Census of Mining and Quarrying 2005-6, the share of KPK in gross Value of Production (GVP) and Gross Value Added in all minerals in Pakistan during 2005-6 stood at 3.82 and 3.6 percent respectively. Among the key minerals, major contribution to GVP was attributed to Marble i.e. 74% while its share in GVA was only 3 percent. Similarly, Limestone contributed 21.3% to the aggregate GVP of Minerals with a meager 0.32 percent of aggregate GVA. This comparison leads to the conclusion that there is dire need and room of measures for improvements in the Value Addition of major minerals.⁴⁰

Table 15: Major Minerals in KPK

	KPK		Pakistan		% Share of KPK	
Type of Mineral	Gross Value of Production ('000' Rs.)	Gross Value Added ('000' Rs.)	Gross Value of Production ('000' Rs.)	Gross Value Added ('000' Rs.)	GVP %	GVA %
All Minerals	8403463	6709334	219815854	187920703	3.82	3.6
Coal	580192	6537	8052565	5804145	7.2	0.11
Crude Oil	1703564	679218	36761238	28944422	4.6	2.3
Lime Stone	2346288	31462	11035742	9600024	21.3	0.32
Marble	837771	30429	1132531	1038398	74	3
Natural Gas	2028499	859254	155653265	136039416	1.3	0.63
Others	907149	25798	7180513	6494500	12.6	0.4
Source: Census of Mining and Quarrying, 2005 - 06						

4.1 CATEGORIES OF MAJOR MINERAL

Following are major categories of Mineral resources in KPK:

- **Dimension stones** i.e. marble, granites and other decorative stones.
- **Gemstones** i.e. emeralds, topaz, corundum, tourmaline, aquamarine, peridot, etc.

⁴⁰ Census of Mining and quarrying 2005-6

- **Industrial rocks & minerals** i.e. phosphate, soapstone, feldspar, gypsum, rock salt, limestone, silica sand, etc.
- **Fuel Minerals** i.e. Coal & natural gas and oil.
- **Metallic minerals** i.e. including gold and base metals

During FY 2010-11, out of 972 projects funded through Annual development Plan, Mines and Minerals had only 11 projects with an allocation of 255 million i.e. 0.42% of ADP.

There were eight new projects and three ongoing projects with dismal, overall utilization rate of 0.9 percent.

The situation has not changed much since then as provision for seven ongoing projects during ADP 2013-14 was Rs. 373 million whereas allocation for seven new projects was merely Rs.181 million.⁴¹

4.2 REGULATORY FRAMEWORK

The provincial government is responsible for regulation of all minerals except for Oil and Gas. After 18th Amendment, there is now a shared ownership of even Oil and Gas resources between the federal government and the relevant province.

The existing regulatory framework is based on the North-West Frontier Province Mining Concession Rules, 2005. Main features and business processes outlined in Concession Rules 2005 are enumerated in the following.

4.3 INSTITUTIONAL STRUCTURE

The Mines and Minerals Department (MMD) is responsible for the management of mineral resources⁴² in the province, in terms of:

- Regulating the grant of licenses and mining leases;
- Exploration and development of mineral resources, including assessment and evaluation of mineral areas;
- Welfare of mine workers and enforcement of laws related to safety of mines and workers.

The MMD also provides facilitation activities, including:

- Laboratory facilities in mineral sample testing, analysis and processing;
- Environmental management of mines sites; and

⁴¹ DG Mines and Minerals/ KPK ADP 2013-14

⁴²KPK Comprehensive Development Strategy 2010-17

- Information services to facilitate and attract investment in the mineral sector.

The MMD is also responsible for research and development (R&D) projects, technical support for smaller mining concessions and the evaluation of mineral tenements for the possible grant of licenses. Since the formation of the MMD, it has created new concession rules, established a safety and rescue training centre, supported small-scale gemstone prospecting, and raised awareness about mining issues in the district legal system.

Rules of business for minerals development department KPK as defined by the Government are as follows:

1. *Development of Mineral Resources.*
2. *Consideration of applications and grant of licenses and leases.*
3. *Regulation and monitoring of mining operations and activities in the mineral sector, including collection of royalties.*
4. *Facilitating access to private or public lands and reserve forest areas for the purpose of mineral exploration or development of mineral resources.*
5. *Geological Survey for mineral exploration/resource mapping, including assessment of mining concession.*
6. *Safety of mines and workers and welfare of mine workers and enforcement of Act and rules and regulation made thereunder.*

The regulatory regime is similar to the rest of Pakistan. Supporting infrastructure such as electricity and roads at most of the mining areas in KPK is inadequate, thus making mining even more challenging. During winters, mines and factories in high altitude locations remain closed for 3-5 months due to snow, reducing the overall productivity of a particular mine.

Minerals Development Department is headed by a secretary and assisted by Director General Mines and Minerals and a deputy secretary.

Following is the Organization Chart of the Mineral development Department KPK:

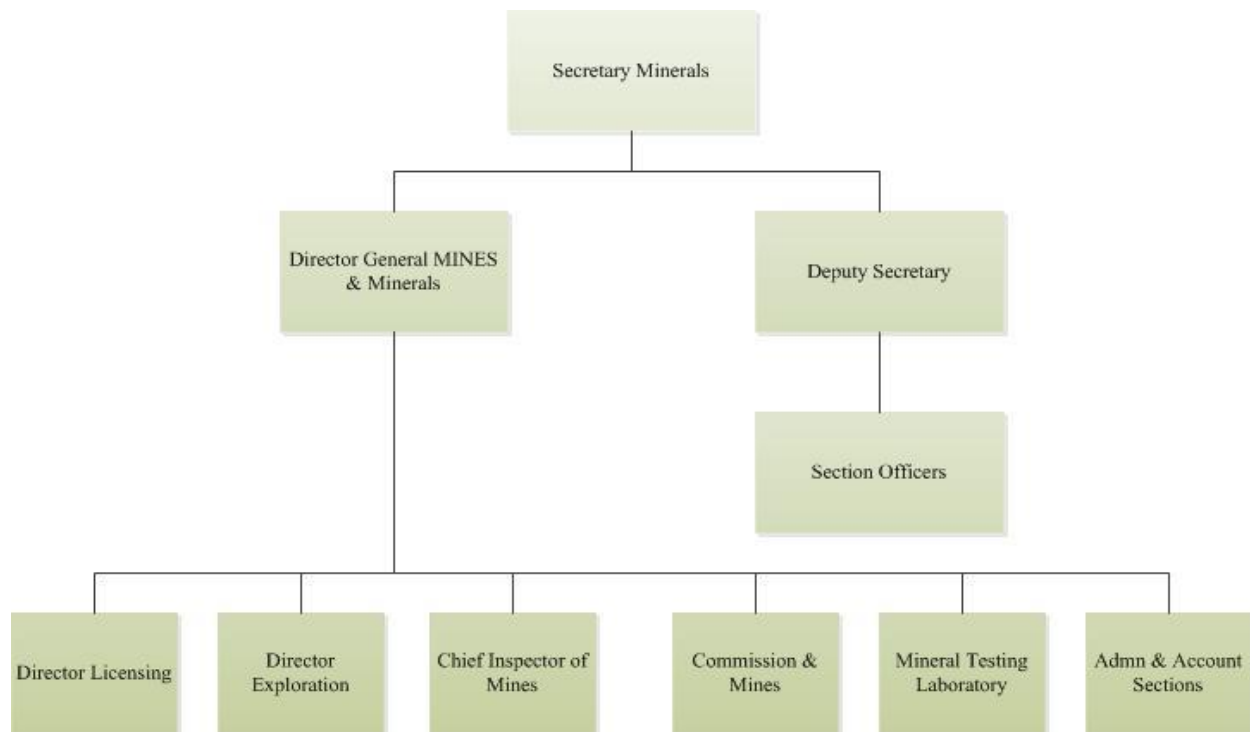


Figure 743: Organization Chart of the Mineral development Department KPK

The Mineral development Department has three Divisions looking after Licensing, Exploration & Promotion and Inspectorate of Mines Labour Welfare.

⁴³ ⁴³ Mineral Development Department KPK

The functions of each division are summed up in the following Graph:

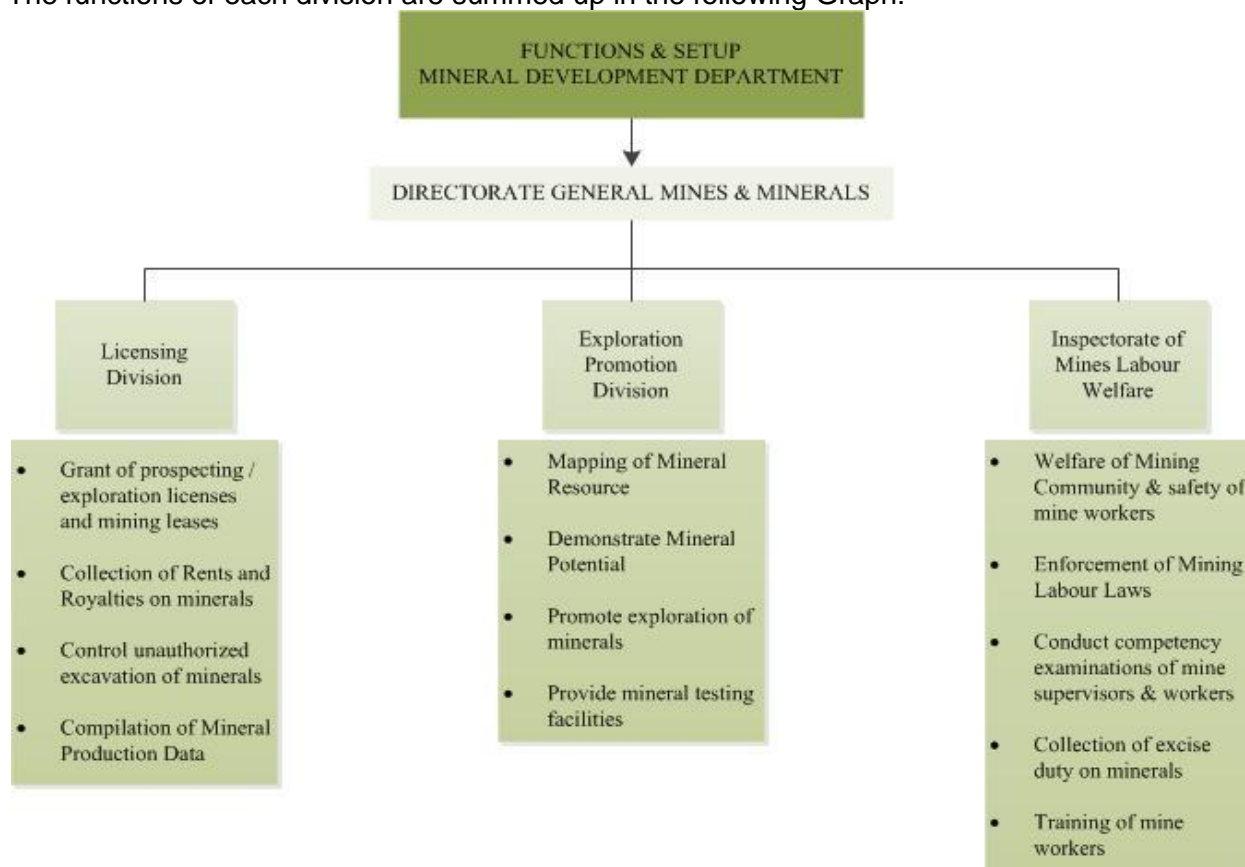


Figure 844: Functions of the Divisions of the Mineral Department KPK

Mines and mineral are important revenue source for KPK Government. Following Table sums up the Revenue Receipts during 2007-13 which reflects that revenue targets were over achieved during 2007-2012. However, revenue targets could not be achieved during 2011-12.

Table 16: Revenue receipt of mineral development department⁴⁵		
YEAR	TARGET (Rs.in million)	ACHIEVEMENT Rs. In million)
2007-2008	350.00	394.96
2008-2009	430.00	348.84
2009-2010	557.50	621.70
2010-2011	580.00	651.729
2011-2012	648.00	733.18
2012-2013 (upto 02/30/13)	692.00	546.078
TOTAL	3257.50	3296.48

⁴⁴ 44 Mineral Development Department KPK

⁴⁵ Mineral Development Department KPK

The key challenges to the sector as outlined by KPK Comprehensive Development Strategy 2010-17 are enumerated as follows⁴⁶:

- Lack of capacity building of the MMD in the management of mineral resources, including regulations
- Lack of mining skills and mine management, leading to wastage of mineral resources and harming the recoverability of mineral reserves
- Lack of investors having the requisite financial and technical soundness
- Problems associated with obtaining permission from local communities and land-owners creating difficulties in access to land in mineral bearing areas;
- Litigation amongst mineral licensees and mining lessees
- Low level of value-added to minerals;
- Lack of adaptation of production to match market demand, creating periods of fluctuating prices
- Lack of co-ordination between the Environment Department and MMD in declaring reserved forest in areas of mineral potential.

4.4 MINING LICENSES, LEASES AND MINERS TO THE PRIVATE PARTIES:

The Mineral Development Department KPK reports having issued 1329 prospecting Licenses/mining leases to the private parties. Prospecting licensing issued stood as 898 as on March 2013; Malakand division had highest licenses as 348 followed by Hazara with 201 licenses. In category of Mining Leases, 431 Leases were issued as on March 2013; Malakand division had highest leases as 135 followed by Hazara division. The details are summed up in the following table:

Table 17 : Prospecting Licences (PI) And Mining Leases (MI) Granted to the Private Parties⁴⁷			
DIVISION	PROSPECTING LICENCES	MINING LEASES	TOTAL
PESHAWAR	120	63	183
MARDAN	81	50	133
KOHAT	88	65	153
D.I.KHAN(Including Banu)	58	11	69
HAZARA	201	107	308
MALAKAND	348	135	483

⁴⁶KPK Comprehensive Development Strategy 2010-17

⁴⁷ Mineral Development Department KPK

TOTAL	898	431	1329
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Mineral Department of KPK reported approximate number of miners as 32,450 in six divisions of the province. Kohat had the highest number of miners as 7,720 followed by Hazara, Peshawar and other divisions.

The details of estimated miners are summed up in the following table⁴⁸:

Table 18: Number Of Miners In Different Divisions of Khyber		
S/N	DIVISION	NO OF MINERS
1	PESHAWAR	6700
2	KOHAT	7720
3	D.I.KHAN	1670
4	HAZARA	7580
5	MALAKAND	4980
6	MARDAN	3800
TOTAL		32450 Approx

4.4.1 Mining Concessions rules 2005

(The North-West Frontier Province mining concession rules, 2005)⁴⁹

4.4.1.1 Large scale mining

Groups of minerals applicable to large scale mining

- a. *Construction and industrial minerals group*
- b. *Precious stones group: Diamonds, Emeralds, rubies and sapphires.*
- c. *Precious metals group: Gold, silver, platinum, palladium, osmium, rhodium, iridium and ruthenium.*
- d. *Semi-precious stones group*
- e. *Base metals group*

4.4.1.2 Types of mineral titles

The following mineral titles issued for the purposes of large-scale mining, namely:

- a. *Reconnaissance license;*
- b. *Exploration license;*
- c. *Mineral deposit retention license; or*
- d. *Mining lease*

⁴⁸ Ibid

⁴⁹ This section is adopted from The north-west frontier province mining concession rules, 2005

4.4.2 Mineral agreements

Government enters into an agreement of a mineral title, if satisfied that substantial investment is likely to be made in mineral operations and that the carrying on the undertaking is desirable in the interest of the development of the mineral resources.

A mineral agreement makes provisions with respect to main issues pertaining to mining operations:

- The grant, renewal, cancellation or transfer of a mineral title;
- Minimum exploration operation to be carried on and related expenditures to be incurred for the purposes of those operations;
- The formation of joint venture;
- The basis on which the fair market value of any mineral or group of minerals may, from time to time, be determined
- The payment of enhanced royalty in specified circumstances;
- The payment of additional profits/ tax in specified circumstances;
- The establishment of secondary and tertiary processing facilities;
- The circumstances in which, and the conditions on which, rights of pre-emption of minerals may be exercised by Government;
- Guarantees to ensure the due and proper performance of the obligation of the holder of the mineral title;
- The techniques to be used for the recovery of that mineral or group of minerals; the technical and financial capabilities of the applicant for a mineral title.
- The likely scale of the capital investment to be made;
- The expenditure and work program proposed by the applicant;
- The likely scale of operation and required infrastructure in the event of a commercial discovery

4.4.2.1 Applications for Grant of Mineral Agreement

Applications under these rules are submitted on following guidelines:

- Application are made to the Licensing Authority on prescribed form and be accompanied by prescribed fee
- Where more than one application is made in respect of the same area of land, the applications are dealt with in the order in which they are received by the Licensing Authority.

- Subject to the rules, the Licensing Authority may accede to, on such conditions as may be determined in writing by it, or refuse to accede to any such application. In case of refusal, the reason therefore shall be communicated to the applicant.

4.5 POWER OF LICENSING AUTHORITY IN RESPECT OF APPLICATIONS

The Licensing Authority shall within sixty days after the receipt of an application under these rules, require the applicant by notice in writing to furnish details of business set up and organization, the area, the kind of mineral title, and the mineral or group of minerals to which the application relates.

4.5.1 Reconnaissance license

4.5.1.1 Application for reconnaissance license

- An application for the grant of a reconnaissance license provides details of persons and business applying for Reconnaissance License.
- Application is made in respect of an area of land which is upto five thousand square kilometer, except where special exemption is granted by Government for the mega project;
- Applicants identify the mineral or group of minerals in respect of which a license is sought accompanied by a detailed topographical and geological description of the boundaries of the area of land to which the application relates, and a plan drawn to its location with reference to the coordinates of the bench mark on topographic sheets; and the extent of the area and the boundaries by reference to identifiable physical features and co-ordinate reference points;
- Application contains particulars of the program of reconnaissance operations proposed to be carried on, the estimated expenditure in respect thereof and the period within which the operations shall be carried on.
- Application needs to state the period, not exceeding twelve months, for which the license is required and be accompanied by such documents as the Licensing Authority may require in relation to any matter referred to in this rule.

4.5.1.2 Duration of reconnaissance license

- A reconnaissance license may be valid for such period, not exceeding twelve months, as may be specified in the license.

4.5.1.3 Rights of holder of reconnaissance license

- A reconnaissance license confers on the holder of
- the license non-exclusive right, or where sub-rule (3) applies, the exclusive right, to carry on reconnaissance operation in relation to the reconnaissance area in question in respect of any mineral or group of minerals to which the license relates; and

- The holder of a reconnaissance license not allowed erecting or constructing any of the ancillary works without the prior consent in writing of the Licensing Authority.
- The Licensing Authority may grant to the applicant a reconnaissance license; or
- make an endorsement on the reconnaissance license, by virtue of which an exclusive right is conferred on the applicant or the holder to exercise the rights if the Licensing Authority is satisfied that the extent of the reconnaissance operations to be carried out and the expenditure to be incurred in relation to the reconnaissance area justify the grant of such exclusive right.

4.5.1.4 Issue of reconnaissance license

- Subject to the rules where the Licensing Authority has no objection to the grant of reconnaissance license, it issues to the applicant reconnaissance license on such conditions as mentioned in the license.

4.5.2 Exploration license

4.5.2.1 Rights of holder of exploration license

- An exploration license shall confer upon the holder an exclusive right:
- To carry on exploration operation in the area in question in respect of any mineral or group of minerals to which the license relates;
- The right to enter and occupy the land which comprises the exploration area for the purpose of carrying out exploration operations, subject to the rights of surface holder;
- The right to take and divert water on or flowing through such land and use it for any purpose necessary for exploration operations subject to and in accordance with the provisions of law for the time being in force;
- With the permission of the Licensing Authority, the holder of an exploration license shall also have the right to remove from the exploration area a mineral or group of minerals or sample thereof, for the purpose of testing, assaying or pilot plant studies,
- To sell or otherwise dispose of limited amounts of any such mineral or group of minerals or of material excavated during exploration operations to do all other things, including the erection or construction of ancillary works, in the exploration area

4.5.2.2 Duration of exploration license

- Subject to these rules, an exploration license shall be valid for such period, not exceeding three years, be renewable for such further period, not exceeding two terms of three years each.
- An exploration license shall not expire during any period when an application for renewal of the license is being considered until the application is refused or withdrawn, whichever first occurs, or if the application is granted, until such time as the license is renewed in

consequence of the application; or where the application is made for the grant of mineral deposit retention license or a mining lease.

4.5.3 Mineral Deposit Retention License

4.5.3.1 Application for mineral deposit retention license

- An application for a mineral deposit retention license shall have business details of person or company, be accompanied by a description and plan of the area of land, not greater than the exploration area concerned, over which the license is sought;
- Identify the mineral or group of minerals to which the application relates and furnish full details of the proven, estimated or inferred mineral reserves contained therein, and of the mining conditions pertaining thereto;
- Contain particulars of the proposals for the carrying out of work in the exploration area and expenditures during the period of the retention license in respect of which the application is made and if no further work in or in relation to the exploration area could be usefully carried out the reasons there for;
- State the period for which the license is required and be accompanied by relevant data, studies, analysis, documents and such other information as the Licensing Authority may require in relation to the application.

4.5.3.2 Pre-requisite for grant of mineral deposit retention license

- Applicant be the holder of an exploration license in relation to the area of land and the mineral or group of minerals to which the application relates;
- Be a potentially economic discovery of mineral deposit has been made in the exploration area;
- The applicant has completed a full feasibility study to determine whether the mineral discovered can be developed and produced on a profitable basis;
- The applicant wishes to retain the exploration area or a part thereof for future development of the mineral deposit discovered as development could not then be reasonably undertaken on a profitable basis for good economic or technical reasons;
- Exploration operations and relevant studies have been undertaken to the maximum extent feasible in the circumstances.

4.5.3.3 Duration of mineral deposit retention license

- Subject to these rules, a mineral deposit retention license shall be valid for such period, not exceeding two years, or not exceeding one year, as may be determined at the time of renewal of the license.
- A mineral deposit retention license shall not expire during the period an application for renewal of the license is being considered, until the renewal is refused or the application is withdrawn

4.5.3.4 Rights of holder of Mineral Deposit Retention license

- Subject to these rules and the conditions of the license, a mineral deposit retention license shall authorize the holder of the license:
- To retain the retention area in question for further mining operations subject to the provisions of rule
- To carry out a program of operations such as is referred to in rules
- To remove from the retention area any mineral or group of minerals or sample thereof, for the purposes of testing, assaying or pilot plant studies
- To sell or otherwise dispose of limited amounts of any mineral or group of minerals or material excavated during operations so carried out;
- To do all other things, including the carrying out of investigations and operations and the erection or construction of ancillary works, in the retention area, as may be reasonably necessary for, or in connection with

4.6 MINING LEASE

4.6.1 Application for mining lease

- An application for the grant of a mining lease may be made only by a body corporate formed by or under a law for the time being in force in Pakistan.
- Application be accompanied by a description and plan such as is required by these rules or as the Licensing Authority may require;
- Application be made in respect of an area of land not exceeding two hundred and fifty square kilometers;
- Application be accompanied by a technological report on mining and treatment possibilities and the intention of the applicant in relation thereto;
- Application be accompanied by the relevant feasibility studies, detailed plans for development and operation of the mine and the program of proposed mining operations, including a forecast of-
 - (i) The date by which the applicant intends to work for profit,
 - (ii) The capacity of production and scale of operations,
 - (iii) The anticipated overall recovery of ore and mineral products; and
 - (iv) The nature of the products;
 - (g) Be accompanied by an environmental impact assessment in terms of the

Environmental Protection Act, 1997, and shall identify the extent of any adverse effect which the plan for development and operation of the mine and the carrying out of the program of proposed mining operations would be likely to have on the environment and on any monument or relic in the area

- Application to give or be accompanied by a statement giving a detailed forecast of capital investment, operating costs and revenues and the anticipated type and source and extent of financing;
- Application be accompanied by a statement giving particulars of expected infrastructure requirements;

4.6.2 Duration of mining lease

- Subject to these rules, a mining lease shall be valid-
 - (a) *for such period, not exceeding thirty years or the period representing the life of the mine based on exploration / evaluation of a mineral deposit and the development work plan, as determined by the Licensing Authority, whichever is lesser, as may be specified in the lease; and*
 - (b) *for such period, subject to sub-rule (2), as may be determined by the Licensing authority in relation to any renewal of the lease, as from the date on which the lease would have expired if an application for its renewal had not been made or on the date on which the application for renewal is granted, whichever is later.*
- A mining lease may be renewed for a period not exceeding ten years, or for the period representing the estimated life of the mine by the Licensing Authority, as determined on the basis of available data, whichever is the lesser period as from the date on which the application for renewal is received by the Licensing authority.
- Notwithstanding the provisions of sub-rule (1), but subject to the other provisions of these rules, where an application is made for the renewal of a mining lease, the lease shall not expire during the period the application is being considered, unless the application is refused or withdrawn, whichever is the lesser period as from the date on which the application for renewal is received by the Licensing Authority.

4.6.3 Rights of holder of mining lease

Subject to these rules and the conditions of the lease, a mining lease shall confer on the holder of the lease:

- The exclusive right to carry on mining operations in the mining area in question in respect of any mineral or group of minerals to which the lease relates;
- The right to enter and occupy the land which comprises the mining area for the purpose of carrying on mining operations and exploration operations

- The right to carry on exploration operation in the mining area in conjunction with mining operations such as are referred to in clause (a) above in relation to any such mineral or group of minerals;
- The right to remove from the mining area any mineral or group of minerals, from any place where it was found or mined in the course of mining operations to any other place within or outside the Province or, subject to such other permission as may be required under any relevant law, to any place outside Pakistan;
- The right to take and divert water on or flowing through such land and use it for any purpose necessary for mining operations subject to and in accordance with the provisions of the relevant laws;
- The right to sell or otherwise dispose of any such mineral or group of minerals subject to any condition of the mining lease or mineral agreement relating to the satisfaction of the internal requirements of Pakistan;
- The right to do all other things and carry on such other operations, including the erection or construction of ancillary works, as may be reasonably necessary for, or in connection with, the mining or exploration operations, removal, selling or disposal contemplated in the rules.

4.6.4 Issue of mining lease

The provisions of rule 17 shall apply mutatis mutandis in relation to the issue of mining leases as they apply in relation to the issue of a reconnaissance license.

4.6.5 Royalties' payable on minerals

Subject to these rules, the holder of:

- a. *A mining lease who has won or mined any mineral or group of minerals in the course of any exploration or mining operations carried on by the holder; or*
- b. *An exploration license or a mineral deposit retention license, who has found or incidentally won any mineral or group of minerals in the course of any exploration operations carried on by the holder, shall be liable to pay to Government, in respect of any such mineral or group of minerals disposed of by the holder, royalty as determined under rule 65.*

4.6.5.1 Rate of royalties

Subject to these rules, royalty shall be charged, in respect of any mineral referred to in clause (a) or (b) of sub-rule (1) of rule 64, which is disposed of , on the following basis;

- In the case of coal, and the construction and industrial minerals group as specified in Schedule 3, at such rates as may be notified by Government from time to time;
- In case of-
 - a. *precious stones group as so specified; or*

- b. precious metals group and semi-precious stones group as so specified; or*
- c. base metals group as so specified; or*
- d. rare metals as so specified; and*
- e. Any other mineral, on the fair market value of the mineral or group of minerals as provided in this rule.*

4.7 SMALL SCALE MINING

4.7.1 Applications

- An application for a license or a lease for a small scale mining shall be in the form set out by the Licensing Authority.
- The application shall be handed over along with the requisite documents to the officer authorized in this behalf, by the Licensing Authority.
- The application, if complete in all respects, shall forthwith be allotted a registration number.
- The incomplete application shall be returned along with the objections duly signed by the authorized officer.

4.7.2 Grant of more than one license or lease to the same person:

More than one license or lease may be granted to the same person.

4.7.2.1 Availability of area and mineral

On receipt of the application, the Licensing Authority shall, before granting any mining concession, ascertain that the area applied for does not overlap with an area already covered by a license or a lease.

4.7.2.2 Priority

More than one applications for the grant of license or a lease in respect of the same mineral or area, unless the Licensing Authority decides otherwise on valid grounds,

4.7.2.3 Refusal to grant license or lease

If, in the opinion of the Licensing Authority, it is not expedient to grant license or a lease, it shall refuse the application, recording reason of refusal.

4.7.2.4 Lapse of right to license or lease

If a Licensee or a lessee fails to submit the accepted copy of the plan of the granted area, demarcation certificate and prospecting/development scheme in the manner as prescribed under these rules, within the time period fixed in the allotment letter, the Licensing Authority, after providing an opportunity to explain the delay, may terminate the mining concession if any granted:

4.7.3 Terms and conditions of licenses and leases

A license and a lease shall stand granted on the issuance of Allotment Letter by the Licensing Authority and may include such clauses relating to ancillary matters as the Licensing Authority may deem fit to insert.

4.7.3.1 Security deposit

Every applicant shall, before a license or a lease is granted or assigned to him, deposit a security in respect of such license or lease at the rate and in the form notified by Government.

Subject to the provision of these rules, if a license is converted into a lease, the security deposited shall be adjusted towards security for the lease.

4.7.4 Prospecting licenses

4.7.4.1 Grant of prospecting license

The Licensing Authority may in accordance with these rules grant a prospecting license for a mineral over the area specified therein provided the applicant is considered fit.

4.7.4.2 Area

Except as otherwise determined by Government, a prospecting license shall not be granted in respect of any area of more than five square kilometers.

4.7.4.3 Period of license

The license shall, in the first instance, be valid for a period of two years.

4.7.4.4 Licensee's right under a license

A license shall, subject to the rules and conditions contained in the license, confer on the licensee the rights given in the allotment letter.

4.7.4.5 Renewal

Subject to the licensee having carried out the working obligations, the Licensing Authority may grant renewal of the license for a period of twelve months at any one time to enable the licensee to complete the prospecting work as laid down in the approved prospecting scheme:

- Provided that the total period of the license including the initial period shall not exceed five years:
- Provided further that the licensee shall apply in writing to the Licensing Authority for renewal at least one month before the license expires. The Licensing Authority may, however, condone the delay in the submission of the application, subject to fine, as fixed by Government.

4.7.4.6 Annual fee

The licensee shall pay such annual fee as is notified by Government from time to time for the area covered by the license. The fee shall be enhanced by twenty-five per cent over the last fee paid each time the license is renewed. The fee shall also be payable for the period of renewal granted.

The fee shall be payable for each mineral separately even if the area under license for different minerals is the same.

4.7.4.7 Right of the licensee to a mining lease

Subject to the provisions of the rules, the licensee shall have a right to a lease:

Provided that he has carried on geological prospecting to the satisfaction of the Licensing Authority, proved mineral reserves and has been paying all Government dues regularly and has paid such compensation, if any, as is provided in these rules:

Provided further that the licensee shall apply in the prescribed form along with documents as laid down for the grant of a lease at least one month before the expiry of the license. The Licensing Authority may, condone the delay up to a maximum period of two months in the submission of such an application after imposing a fine at the rate of thousand rupees for each month or a part thereof.

4.7.5 Mining of minor minerals

There shall be no mining of minor minerals except under a lease granted in accordance with these rules. Notwithstanding anything contained in these rules a lease for minor mineral shall be granted and governed by rules relating to minor minerals under these rules.

4.7.5.1 Period of lease

The period of a lease shall not exceed three years.

4.7.5.2 Mode of grant

A lease shall be granted on "as is, where is basis" through open auction conducted by an Auction Committee constituted under the rules 192. The area granted under a mining lease shall not be altered or changed in any case.

4.7.5.3 Constitution of an Auction Committee

Government may, by notification, constitute an Auction Committee in each District, to conduct auction of leases for minor minerals, which shall consist of such member as Government may notify from time to time.

4.7.5.4 Shape and size of the area

Each area in respect of which a lease is granted shall, as far as practicable, be in a compact shape and shall be identified by well-marked permanent physical boundaries or by straight lines. No lease shall be granted in respect of an area exceeding two hundred acres in the form of one unit.

4.8 MINOR MINERALS OF KPK

The minor minerals to be granted under these rules will include bajri, ordinary sand and gravel.

4.9 MAJOR MINERALS OF KPK

4.9.1 Limestone

Limestone mining accounts for almost 70% of the total production volume and shale/clay about 10%. Over 40% of limestone mined in Pakistan originates from KPK, as well as over 70% of fire clay and about 40% of gypsum, which places KPK as a leading producer of cement in the country.

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4.9.2 Dimension Stones

The Directorate General for Mines and Minerals of KPK estimates marble reserves at about 3 billion tonnes. KPK accounts for over 70% of marble production in Pakistan. Potential for granite mining is also vast but reserves are less well known. The dimension stone mining boom has been continuing for the past decade with a number of operations expanding but still remaining on a small scale, employing outdated techniques. Dimension stones are being exported internationally. On a per capita basis, this industry is larger than the one in India, but it lacks behind India in terms of the percentage of extraction, level of productivity, technology and trade orientation. This sector has huge potential, but it is being severely underdeveloped due to inefficient mining techniques.

4.9.3 Gemstones

Internationally Pakistan is known as a source of specimen minerals, which are amongst the best in the world. Pakistan is believed to host the fifth largest gemstone deposits in the world, but according to information circulated during a workshop in Islamabad in 2003 on gemstone mining, out of a total US\$8 billion dollar global gemstone market in 2003, Pakistan accounted for a mere US\$13 million. Gemstones are found in Chitral (beryl, garnet, and aquamarine), Dirr (ruby and beryl), Swat (emerald), Mardan (Topaz) and Hazara (ruby, peridot).

There have been various government led initiatives for promoting private sector investment in gem stone mining. Most of these initiatives have circled around auctioning the gem stone mines to local private investors. However, these initiatives have not borne fruit since local investment has done little, primarily because of lack of funds and capacity, to increase the productivity of these mines. Foreign direct investment into this sector would be warmly welcomed and would lead to a rapid improvement in the mining techniques, thus improving productivity.

Gemstone mining in KPK is generally carried out using primitive techniques and use of dynamite, which damages valuable stones by fracturing. Many gemstone mines are located at high altitudes without appropriate access by road. Exploration is pretty basic with miners following gemstone veins. The government has repeatedly ensured security to foreign investors willing to invest in this area.

⁵⁰ Bringing Mining in Pakistan to International Standards- Pakistan Mineral Working Group, KPK Comprehensive Development Strategy 2010-17, DG Mineral development Department

4.9.4 Coal

Coal is found mostly in Karak, Hangu and Cherat areas, generally in steeply dipping, single narrow seams. There is a strong need for funding and use of new technology for developing coal mining in these areas.

4.9.5 Metallic Minerals

KPK has recorded occurrences of a number of precious and base metallic minerals, including gold, silver, copper, platinum and tungsten. High gold content discoveries in hard rock were made at Mirkhani copper and gold prospects. Definitive large-scale exploration is required before the potential of KPK and FATA can be assessed for the presence of metallic minerals. The sector is ripe for investment for large-scale exploration.

